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P. L. SCLATER,

*Secretary.*

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The Record of Zoological Literature, 1865. Volume Second.  
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The Record of Zoological Literature, 1866. Volume Third.  
Edited by ALBERT C. L. G. GÜNTHER, M.A., M.D., Ph.D., F.R.S.,  
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The Record of Zoological Literature, 1867. Volume Fourth.  
Edited by ALBERT C. L. G. GÜNTHER, M.A., M.D., Ph.D., F.R.S.,  
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The Record of Zoological Literature, 1868. Volume Fifth.  
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The Record of Zoological Literature, 1869. Volume Sixth.  
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The Zoological Record for 1870 ; being Volume Seventh of the  
Record of Zoological Literature. Edited by ALFRED NEWTON, M.A.,  
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The Zoological Record for 1871 ; being Volume Eighth of the  
Record of Zoological Literature. Edited by ALFRED NEWTON, M.A.,  
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Record of Zoological Literature. Edited by ALFRED NEWTON, M.A.,  
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The Zoological Record for 1873 ; being Volume Tenth of the  
Record of Zoological Literature. Edited by EDWARD CALDWELL  
RYE, F.Z.S., Librarian to the Royal Geographical Society. London,  
1875. Price 10s.

The Zoological Record for 1874 ; being Volume Eleventh of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1876. Price 10s.

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The Zoological Record for 1875 ; being Volume Twelfth of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1877. Price 10s.

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The Zoological Record for 1876 ; being Volume Thirteenth of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1878. Price 10s.

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The Zoological Record for 1877 ; being Volume Fourteenth of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1879. Price 10s.

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The Zoological Record for 1878 ; being Volume Fifteenth of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1880. Price 10s.

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The Zoological Record for 1879 ; being Volume Sixteenth of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1881. Price 10s.

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The Zoological Record for 1880 ; being Volume Seventeenth of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1881. Price 10s.

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The Zoological Record for 1881 ; being Volume Eighteenth of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1882. Price 10s.

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The Zoological Record for 1882 ; being Volume Nineteenth of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1883. Price 10s.

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The Zoological Record for 1883 ; being Volume Twentieth of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1884. Price 10s.



The Zoological Record for 1884 ; being Volume the Twenty-first of the Record of Zoological Literature. Edited by F. JEFFREY BELL, M.A., Sec. R.M.S., Professor of Comparative Anatomy and Zoology in King's College, London. London, 1885. Price 10s.

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The Zoological Record for 1885 ; being Volume the Twenty-second of the Record of Zoological Literature. Edited by F. JEFFREY BELL, M.A., Sec. R.M.S., Professor of Comparative Anatomy and Zoology in King's College, London. London, 1886. Price 10s.

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The Zoological Record for 1886 ; being Volume the Twenty-third of the Record of Zoological Literature. Edited by FRANK E. BEDDARD, M.A., F.Z.S., Prosector and Davis Lecturer to the Zoological Society of London. London, 1887. Price 10s.

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The Zoological Record for 1887 ; being Volume the Twenty-fourth of the Record of Zoological Literature. Edited by FRANK E. BEDDARD, M.A., F.Z.S., Prosector and Davis Lecturer to the Zoological Society of London. London, 1888. Price 10s.

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The Zoological Record for 1888 ; being Volume the Twenty-fifth of the Record of Zoological Literature. Edited by FRANK E. BEDDARD, M.A., F.Z.S., Prosector and Davis Lecturer to the Zoological Society of London. London, 1890. Price 10s.

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The Zoological Record for 1889 ; being Volume the Twenty-sixth of the Record of Zoological Literature. Edited by FRANK E. BEDDARD, M.A., F.Z.S., Prosector and Davis Lecturer to the Zoological Society of London. London, 1890. Price 10s.

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The Zoological Record for 1890 ; being Volume the Twenty-seventh of the Record of Zoological Literature. Edited by FRANK E. BEDDARD, M.A., F.Z.S., Prosector and Davis Lecturer to the Zoological Society of London. London, 1892. Price 10s.

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The Zoological Record for 1891 ; being Volume the Twenty-eighth of the Record of Zoological Literature. Edited by DAVID SHARP, Esq., M.D., F.R.S., F.Z.S. London, 1892. Price 80s.

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The Zoological Record for 1892 ; being Volume the Twenty-ninth of the Record of Zoological Literature. Edited by DAVID SHARP, Esq., M.D., F.R.S., F.Z.S. London, 1893. Price 80s.

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THE  
ZOOLOGICAL RECORD,

VOLUME THE TWENTY-NINTH.

BEING

RECORDS OF ZOOLOGICAL LITERATURE

RELATING CHIEFLY TO THE YEAR

1892.

By J. A. THOMSON, R. LYDEKKER, R. BOWDLER SHARPE, G. A. BOUL-  
LENGER, W. A. HERDMAN, B. B. WOODWARD, R. I. POCOCK, D. SHARP,  
F. A. BATHER, FLORENCE BUCHANAN, S. J. HICKSON, AND R. HANITSCH.

EDITED BY

D. SHARP, M.A., F.R.S., F.Z.S., &c.,

CURATOR IN ZOOLOGY, UNIVERSITY MUSEUM OF ZOOLOGY AND COMPARATIVE  
ANATOMY, CAMBRIDGE.

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LONDON :

GURNEY & JACKSON, PATERNOSTER ROW.

M.DCCC.XCIII.



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The Editor thanks those Societies and individuals who have forwarded works and papers for the purposes of the Record, and suggests that Societies publishing Zoological Papers would much facilitate the work of the Recorders by forwarding a separate copy of each Zoological Memoir they publish to the Editor for the use of the Recorder.

## PREFACE.

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OWING to the punctuality of most of the Recorders the twenty-ninth volume of the ZOOLOGICAL RECORD will be in the hands of the subscribers at a date that may, it is hoped, be considered satisfactory.

The names of three new Recorders appear on the title page, and the Editor feels it to be a duty, as well as a pleasure, to thank all the Contributors, old and new, for their assistance. The three new Recorders, Miss Florence Buchanan, Mr. F. O. Bather, and Dr. R. Hanitsch, have carried out their work in an efficient manner, though it is much to be regretted that Mr. Bather was prevented by a weakness of the eyes from completing his examination of the literature relating to *Echinodermata*. Mr. J. A. Thomson, being desirous of facilitating reference in the very extensive and difficult department he deals with, has drawn up a complete Subject Record in addition to a separate List of Works and Essays.

On comparing this twenty-ninth volume with those of the earlier part of the series, it will be noticed that the scope of the Record has become much enlarged. The Zoology of our days is an aggregate of a number of special departments of observation and research; hence, it is no easy task to furnish a complete Record, and at the same time to arrange it so as to meet the wishes of the various persons who may consult it from different points of view. In order to make the work as widely useful as possible, it appears to be necessary to give in each Record an Index of Special Subjects in addition to the List of Titles and the taxonomical arrangement according to genera; and this the Editor hopes may prove to be

feasible. Abstracts of, and Reports on, the Memoirs recorded will, as a consequence, be reduced to the narrowest dimensions.

As completeness should be the most indispensable of the characteristics of the work, there is in each of the Records one department it is impossible to speak of with satisfaction, viz.: Palæontology. When the Record was established it was not intended to include this subject. At the present time some of the Recorders examine the Geological literature of each year, and give a nearly complete epitome of the Palæontology they meet with, while others are content with a less exhaustive treatment of the subject.

To make the Palæontology complete, and to give a stratigraphical Index to it in each of the eighteen Records of which our volume consists, is a course that would add considerably to the labours of the Recorders and somewhat to the extent of the Volume, and cannot, therefore, in the present circumstances of the Record, be adopted. Indeed, it would be preferable for the Palæontologists to undertake a separate Record, and if no other satisfactory arrangement can be made, it may be hoped that they will do so, and thus relieve the Zoological Recorders from a task which they only imperfectly carry out.

D. SHARP.

CAMBRIDGE, *Sept.* 1, 1893.

LIST OF THE ABBREVIATED TITLES  
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SOCIETIES  
THAT CONTAIN ZOOLOGICAL PAPERS.

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- Abh. Ak. Berl.*—Abhandlungen der königlich Akademie der Wissenschaften zu Berlin. (Also *SB.*)
- Abh. Bayer. Ak.*—Abhandlungen der mathematisch-physikalischen Classe der k. Bayerischen Akademie der Wissenschaften (Munich). (Also *SB.*)
- Abh. Böhm. Ges.*—Abhandlungen der mathematisch-naturwissenschaftlichen Classe der k. Böhmisches Gesellschaft der Wissenschaften (Prague). (Called also *Rozpravy tridy mathematicko-přirodovědecké královské české společnosti nauk.*) (Also *SB.*)
- Abh. Ges. Götting.*—Abhandlungen der k. Gesellschaft der Wissenschaften zu Göttingen.
- Abh. Ges. Halle*—Abhandlungen der naturforschenden Gesellschaft in Halle. (Also *Ber.*)
- Abh. Ges. Isis*—Abhandlungen der naturwissenschaftlichen Gesellschaft 'Isis' in Dresden. (See *SB.*)
- Abh. Ges. Königsb.*—Abhandlungen der k. physikalisch-ökonomischen Gesellschaft in Preussen (Königsberg). (Also *SB.*)
- Abh. naturf. Ges. Görlitz*—Abhandlungen der naturforschenden Gesellschaft zu Görlitz.
- Abh. naturh. Ges. Nürnberg*—Abhandlungen der naturhistorischen Gesellschaft zu Nürnberg (Nürnberg).
- Abh. Sächs. Ges.*—Abhandlungen der k. Sächsischen Gesellschaft der Wissenschaften (Leipzig). (Also *Ber.*)
- Abh. Schw. pal. Ges.*—Abhandlungen der Schweizerischen paläontographischen Gesellschaft (Bâle).
- Abh. Senck. Ges.*—Abhandlungen herausgegeben von der Senckenbergischen naturforschenden Gesellschaft (Frankfort). (Also *Ber.*)



- Abh. Ver. Brem.*—Abhandlungen herausgegeben vom naturwissenschaftlichen Verein zu Bremen.
- Abh. Ver. Hamb.*—Abhandlungen aus dem Gebiete der Naturwissenschaften herausgegeben vom naturw. Verein in Hamburg.
- Abh. zool. Mus. Dresden*—Abhandlungen und Berichte des k. zoologischen, etc., Museums in Dresden.
- Act. Ac. Bordeaux*—Actes de l'Académie nationale des Sciences, Belles Lettres et Arts de Bordeaux.
- Act. Ac. Córdoba*—Actas de l'Academia nacional de Ciencias en Córdoba (Buenos Ayres).
- Act. Lund.*—Acta Universitatis Lundensis (Lund). (Called also *Lunds Universitets Årsskrift*.)
- Act. Soc. Chili*—Actes de la Société scientifique du Chili.
- Act. Soc. Fenn.*—Acta Societatis Scientiarum Fennicæ (Helsingfors).
- Act. Soc. Helv.*—Actes de la Société Helvétique des Sciences naturelles. (Called also *Verhandl. d. schweiz. Naturforsch. Gesells.*)
- Act. Soc. Jura.*—Actes de la Société Jurassienne d'Émulation.
- Act. Soc. L. Bord.*—Actes de la Société Linnéenne de Bordeaux. (Also *Comptes rendus*.)
- Act. Upsala.*—Acta Universitatis Upsalensis. (Called also *Upsala Universitets Årsskrift*.)
- Agric. Gaz. N.S.W.*—Agricultural Gazette of New South Wales (Sydney).
- Am. Geol.*—The American Geologist (Calvin et alii : Minneapolis).
- Am. J. Sci.*—American Journal of Science (New Haven).
- Am. Micr. J.*—American Monthly Microscopical Journal (Washington).
- Am. Nat.*—The American Naturalist (Philadelphia).
- Anat. Anz.*—Anatomischer Anzeiger (Bardleben : Jena).
- An. Mus. B. Aires*—Anales del Museo nacional, Buenos Aires.
- An. Mus. Costa Rica*—Anales del Museo nacional, Republica de Costa Rica (San José).
- An. Mus. La Plata*—Anales del Museo, La Plata (Buenos Ayres).
- An. Mus. nac. Mexico*—Anales del Museo nacional de México.
- An. Soc. Arg.*—Anales de la Sociedad Científica Argentina (Buenos Ayres).
- An. Soc. Esp.*—Anales de la Sociedad Española de Historia Natural (Madrid).
- Ann. Ent. Belg.*—Annales de la Société Entomologique de Belgique (Brussels).
- Ann. Fac. Marseille*—Annales de la Faculté des Sciences de Marseille, publiées sous les auspices de la municipalité (Marseille & Paris).
- Ann. Géol. univ. Paris*—Annuaire Géologique universel, Revue de Géologie et Paléontologie (Carey & Douville).
- Ann. Hofmuseum Wien*—Annalen des k. k. naturhistorischen Hofmuseums (von Hauer : Vienna).

- Ann. Mal.*—Annales de Malacologie (Servain : Paris).
- Ann. Micrograph.*—Annales de Micrographie spécialement consacrées à la Bactériologie aux Protophytes et aux Protozoaires (Miquel : Paris).
- Ann. Mus. Belg.*—Annales du Musée royal d'Histoire Naturelle de Belgique (Brussels).
- Ann. Mus. Genov.*—Annali del Museo civico di Storia Naturale di Genova (Genoa).
- Ann. Mus. Marseille*—Annales du Musée d'Histoire Naturelle de Marseille. Zoologie (Marion : Marseilles).
- Ann. N. H.*—Annals and Magazine of Natural History (London).
- Ann. N. York Ac.*—Annals of the New York Academy of Sciences. (Also *Trans.*)
- Ann. Queensland Mus.*—Annals of the Queensland Museum (Brisbane).
- Ann. Sci. Géol.*—Annales des Sciences Géologiques (Hébert & Milne-Edwards : Paris).
- Ann. Sci. Nat.*—Annales des Sciences Naturelles. Zoologie. (Paris).
- Ann. Scot. N. H.*—The Annals of Scottish Natural History.
- Ann. Soc. Agric. Lyon*—Annales de la Société d'Agriculture, Histoire Naturelle, et Arts utiles de Lyon (Lyons & Paris).
- Ann. Soc. Belg. Micr.*—(Also *Bull. Soc. Belg. Micr.*, q.v.)
- Ann. Soc. Brux.*—Annales de la Société Scientifique de Bruxelles (Brussels).
- Ann. Soc. Char.*—Annales de la Société des Sciences Naturelles de la Charente Inférieure (= Académie de la Rochelle).
- Ann. Soc. Ent. Fr.*—Annales de la Société Entomologique de France (Paris).
- Ann. Soc. Géol. Belg.*—Annales de la Société Géologique de Belgique (Liège).
- Ann. Soc. Géol. Nord*—Annales de la Société Géologique du Nord (Lille). (Also *Mémoires.*)
- Ann. Soc. L. Lyon (n.s.)*—Annales de la Société Linnéenne de Lyon. Nouvelle série.
- Ann. Soc. Mal. Belg.*—Annales de la Société Malacologique de Belgique (Brussels).
- Ann. Univ. Lyon*—Annales de l'université de Lyon (Paris).
- Ann. Univ. Toscane*—Annali delle Università Toscane (Pisa).
- Ant. Annual*—The Antananarivo Annual and Madagascar Magazine (Sibree : Antananarivo).
- Anz. Ak. Wien*—Anzeiger der mathematisch-naturwissenschaftlichen Classe der k. Akademie der Wissenschaften zu Wien (Vienna).
- Appalachia*—Appalachia: the Journal of the Appalachian Mountain Club (Boston).
- Arb. Inst. Würzb.*—Arbeiten aus dem zoologisch-zootomischen Institute in Würzburg.

- Arb. z. Inst. Wien*.—Arbeiten aus dem zoologischen Institute der Universität Wien (Vienna).
- Arb. z. Inst. Graz*.—Arbeiten aus dem zoologischen Institute zu Graz (Leipsic).
- Arch. Anat. Phys.*—Archiv für Anatomie und Physiologie (His, Braune, & Du Bois Reymond : Leipzig).
- Arch. Biol.*—Archives de Biologie (Van Beneden & Van Bambeke : Ghent).
- Arch. d'Anthrop.*—Archives d'Anthropologie (Toulouse).
- Arch. f. Anthrop.*—Archiv für Anthropologie : Zeitschrift für Naturgeschichte und Urgeschichte des Menschen (Brunswick).
- Arch. f. Math. og Naturr.*—Archiv for Mathematik og Naturvidenskab (Lie, G. O. Sars : Kristiania).
- Arch. f. Nat.*—Archiv für Naturgeschichte. Neue Folge (Berlin).
- Arch. f. Thierheilk.*—Archiv für Thierheilkunde.
- Arch. ges. Phys.*—Archiv für die gesammte Physiologie des Menschen und der Thiere (Pflüger : Bonn).
- Arch. Ital. Biol.*—Archives Italiennes de Biologie ; Revues, Résumés, Reproductions des travaux scientifiques Italiens (Emery & Mosso : Turin).
- Arch. mikr. Anat.*—Archiv für mikroskopische Anatomie (Bonn).
- Arch. Miss. Sci.*—Archives des Missions Scientifiques et Littéraires (Paris).
- Arch. Mus. Lyon*.—Archives du Muséum d'Histoire Naturelle de Lyon.
- Arch. Mus. R. Jan.*—Archivos do Museu nacional do Rio de Janeiro.
- Arch. Mus. Teyl.*—Archives du Musée Teyler (Haarlem).
- Arch. Nat. Liv.*—Archiv für die Naturkunde Liv-, Esth-, und Kurlands (Dorpat).
- Arch. naturw. Landesforsch. Böhmen*.—Archiv für naturwissenschaftliche Landesdurchforschung von Böhmen (Prag).
- Arch. Néerl.*—Archives Néerlandaises des Sciences Exactes et Naturelles (Bosscha : Haarlem).
- Arch. Phys.*—Archives de Physiologie Normale et Pathologique (Brown-Séquard : Paris).
- Arch. Sci. Nat.*—Archives des Sciences Physiques et Naturelles (Geneva).
- Arch. Ver. Mecklenb.*—Archiv des Vereins der Freunde der Naturgeschichte in Mecklenburg.
- Arch. Zeeuwsch Genoots. Wetensch.*—Archief vroegere en latere Mededeelingen voornamelijk in Betrekking tot Zeeland uitgegeven door het Zeeuwsch Genootschap der Wetenschappen (Middelburg).
- Arch. Z. expér.*—Archives de Zoologie expérimentale et générale (Lacaze-Duthiers : Paris).
- Atti Acc. Gioen.*—Atti dell' Accademia Gioenia di Scienze Naturali (Catania).

- Atti Acc. Napoli*.—Atti della R. Accademia delle Scienze Fisiche e Matematiche.
- Atti Acc. Palermo*.—Atti della R. Accademia di Scienze, Lettere e Belle Arti di Palermo (Palermo).
- Atti Acc. Pontaniana*.—Atti dell' Accademia Pontaniana (Naples).
- Atti Acc. Pontif. Lincei*.—Atti dell' Accademia Pontificia de' nuovi Lincei.
- Atti Acc. Tor.*.—Atti della R. Accademia delle Scienze di Torino (Turin).
- Atti Ist. Nap.*.—Atti del R. Istituto d'incoraggiamento alle Scienze Naturali Economiche e Technologiche, &c., di Napoli (Naples).
- Atti Ist. Venet.*.—Atti del R. Istituto Veneto di Scienza, Lettere et Arti, &c. (Venice).
- Atti [Mem. Rend.] Acc. Rom.*.—Atti [Memorie : Rendiconti] della R. Accademia dei Lincei (Rome).
- Atti [Mem.] Soc. Tosc.*.—Atti [Memorie] della Società Toscana di Scienze Naturali residente in Pisa.
- Atti [Rend. Mem.] Soc. Mod.*.—Atti [Memorie : Rendiconti] della Società dei Naturalisti di Modena.
- Atti Soc. Ital.*.—Atti della Società Italiana di Scienze Naturali (Milan).
- Atti Soc. Ligust.*.—Atti della Società Ligustica di scienze naturali e geografiche (Genova).
- Atti Soc. Ven.-Trent.*.—Atti della Società Veneto-Trentina di Scienze Naturali residente in Padova (Padua). (Also *Bull.*)
- Atti Univ. Genova*.—Atti della R. Università di Genova.
- Auk*.—The Auk. A Quarterly Journal of Ornithology. (Continuation of the *Bulletin of the Nuttall Ornithological Club.*)
- Ausland*.—Das Ausland (Stuttgart).
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- Beitr. Morphol. Morphog.*.—Beiträge zur Morphologie und Morphogenie (Gerlach : Stuttgart).
- Beitr. Pal. Oesterr.-Ung.*. — Beiträge zur Paläontologie Oesterreich-Ungarn's und des Orients (Mojsisovics & Neumayr : Vienna).
- Beitr. Russ. Reiches* (2).—Beiträge zur Kenntniss des Russischen Reiches und der angrenzenden Länder Asiens. Neue Folge (Schrenck & Maximowics : St. Petersburg).
- Ber. deuts. botan. Ges.*.—Bericht der deutschen botanischen Gesellschaft (Berlin).
- Ber. deutsch. orn. Ges.*.—Bericht der allgemeinen deutschen ornithologischen Gesellschaft zu Berlin.
- Ber. Ges. Freiburg*.—Berichte der naturforschenden Gesellschaft zu Freiburg (Freiburg, i Br.).
- Bergens Mus. Aarsber.*.—Bergens Museum Aarsberetning (Bergen).
- Ber. Ges. Chemnitz*.—Bericht der naturwissenschaftlichen Gesellschaft zu Chemnitz.

- Ber. Ges. Halle*—Bericht über die Sitzungen der naturforschenden Gesellschaft zu Halle. (Also *Abhandl.*)
- Ber. Ges. Hanau* = *JB. wetter. Ges.*
- Ber. Komm. wiss. Unters. deutsch. Meere*—Bericht der Kommission zur Untersuchung der deutschen Meere.
- Ber. Naturf. Ärtzte*—Ämtliche Bericht deutscher Naturforscher und Ärtzte.
- Ber. naturf. Ges. Bamberg*—Bericht der naturforschenden Gesellschaft in Bamberg.
- Ber. naturhist. Mus. Hamburg*—Bericht des naturhistorischen Museums in Hamburg.
- Ber. natur. Ver. Passau*—Bericht des naturhistorischen Vereins in Passau.
- Ber. naturw. Ver. Regensburg*—Bericht der naturwissenschaftlichen Vereins in Regensburg. (Formerly *CB.*)
- Ber. Oberhess. Ges.*—Bericht der Oberhessischen Gesellschaft für Natur- und Heilkunde (Giessen).
- Ber. Offenb. Ver.*—Bericht über die Thätigkeit des Offenbacher Vereins für Naturkunde (Offenbach-on-the-Main).
- Ber. Sächs. Ges.*—Bericht ueber die Verhandlungen der königlichen Sächs. Gesellschaft der Wissenschaft in Leipzig. (Also *Abhandl.*)
- Ber. Senck. Ges.*—Bericht der Senckenbergische naturforschende Gesellschaft im Frankfurt am Main. (Also *Abhandl.*)
- Ber. St. Gall. Ges.*—Bericht über die Thätigkeit der St. Gallischen naturwissenschaftlichen Gesellschaft (St. Gallen).
- Ber. Ver. Cassel*—Berichte des Vereins für Naturkunde zu Cassel.
- Ber. Ver. Pass.*—Bericht der naturwissenschaftlichen Vereins in Passau.
- Ber. Ver. Schwaben*—Bericht der naturwissenschaftlichen Vereins für Schwaben und Neuburg (a. V.), früher naturhistorischen Vereins Augsburg (Augsburg).
- Berl. Monats.*—Berliner Monatshefte.
- B. E. Z.*—Berliner Entomologische Zeitschrift.
- Bibl. haut. études.*—Bibliothèque de l'école des hautes études. Section des Sciences Naturelles (Paris).
- Bibl. univ.*—Bibliothèque universelle et Revue Suisse (Geneva). (See *Arch. Sci. Nat.*)
- Bibl. Zool.*—Bibliotheca Zoologica (Leipsic).
- Bidr. Finl. Nat.*—Bidrag till Kännedom af Finlands Natur och Folk (Helsingfors).
- Bih. Sv. Ak. Handl.*—Bihang till K. Svenska Vetenskaps-Akademien Handlingar (Stockholm).
- Bijdr. Dierk.*—Bijdragen tot de Dierkunde (Amsterdam).
- Biol. Centralbl.*—Biologisches Centralblatt (Rosenthal : Erlangen).
- Biol. Centr. Am.*—Biologia Centrali Americana (Godman & Salvin : London).

- Biol. Fören.*—Biologiska Föreningens Förhandlingar. Verhandlungen des biologischen Vereins in Stockholm. (Figerstedt : Stockholm.)
- Bol. Ac. Arg.*—Boletín de la Academia nacional de Ciencias de la Republica Argentina (Cordoba).
- Bol. geol. S. Paulo*—Boletim da Commissão geographica e geologica da Provincia de S. Paulo.
- Bol. Mus. la Plata*—Boletín del Museo la Plata (Buenos Ayres).
- Bol. Com. Geol.*—Bollettino del R. Comitato Geologico d'Italia (Roma).
- Boll. Mus. Zool. Anat. Comp. Torino*—Bollettino dei Musei di Zoologia ed Anatomia comparata della R. Università di Torino.
- Boll. scient.*—Bollettino scientifico (Maggi, Zoja, & Giovanni : Pavia).
- Boll. Soc. Adr.*—Bollettino della Società Adriatica di Scienze naturali (Trieste).
- Boll. Soc. geol. Ital.*—Bollettino della Società geologica Italiana (Rome).
- Boll. Soc. Nat. Napoli*—Bollettino della Società di Naturalisti in Napoli. (Formerly *Rivista italiana di scienze naturali* [Circolo degli aspiranti naturalisti].)
- Boll. Soc. Rom. Stud. Zool.*—Bollettino della Società Romana per gli Studi Zoologici.
- Bot. Z.*—Botanische Zeitung (Halle).
- Brit. Nat.*—The British Naturalist (Robson : London).
- Bull. Ac. Belg.*—Bulletin de l'Académie royale des Sciences, des Lettres, et des Beaux Arts de Belgique (Brussels). (Also *Mem.*)
- Bull. Ac. Cracovie*—Bulletin international de l'Académie des sciences de Cracovie (Cracovie).
- Bull. Ac. Hippone*—Bulletin de l'Académie d'Hippone (Bône).
- Bull. Am. Mus. Nat. Hist.*—Bulletin of the American Museum of Natural History (New York).
- Bull. Brit. Ornith. Club*—Bulletin of the British Ornithologists' Club.
- Bull. Brookville Soc.*—Bulletin of the Brookville Society of Natural History (Brookville, Indiana, U.S.A.).
- Bull. Buff. Soc.*—Bulletin of the Buffalo Society of Natural Sciences.
- Bull. Bussey Inst.*—Bulletin of the Bussey Institution (Boston).
- Bull. Cornell Univ.*—Bulletin of the Cornell University. (Ithaca.)
- Bull. Denison Univ.*—Bulletin of the Scientific Laboratories of Denison Universities (Granville, Ohio).
- Bull. Dep. Agric. Ent.*—U.S. Department of Agriculture. Division of Entomology. Bulletin (Washington).
- Bull. Ent. Ital.*—Bollettino della Società Entomologica Italiana (Florence).
- Bull. Ess. Inst.*—Bulletin of the Essex Institute (Salem, U.S.A.).
- Bull. Geol. Soc. Amer.*—Bulletin of the Geological Society of America (New York).



- Bull. Illin. Lab. N. H.*—Bulletin of the Illinois State Laboratory of Natural History. (Champaign, Illinois.)
- Bull. Inst. Nat. Genevois*—Bulletin de l'Institut nationale Genevois.
- Bull. Lab. Iowa*—Bulletin from the Laboratories of Natural History of the State University of Iowa (Iowa city).
- Bull. Minnesota Acad.*—Bulletin of the Minnesota Academy of Natural Sciences.
- Bull. Mosc.*—Bulletin de la Société impériale des Naturalistes de Moscou (Menzbier : Moscow).
- Bull. Mus. Belg.*—Bulletin du Musée royal d'Histoire Naturelle de Belgique (Brussels).
- Bull. Mus. C. Z.*—Bulletin of the Museum of Comparative Zoology of Harvard College (Cambridge, U.S.A.).
- Bull. Nat. Hist. Soc. New Brunswick*—Bulletin of the Natural History Society of New Brunswick (St. John's, N.B.).
- Bull. New York Mus. Nat. Hist.*—Bulletin of the New York State Museum of Natural History (Albany).
- Bull. Ohio Exp. Station*—Bulletin of the Ohio Agricultural Experiment Station, Technical Series (Columbus).
- Bull. Pétersb.*—Bulletin de l'Académie impériale des Sciences de St. Pétersbourg.
- Bull. Phil. Soc. Wash.*—Bulletin of the Philosophical Society of Washington.
- Bull. Sci. Fr. Belg.*—Bulletin Scientifique de la France et de la Belgique (Giard : Paris).
- Bull. Soc. Ac. Brest*—Bulletin de la Société Académique de Brest.
- Bull. Soc. Acclim.*—Bulletin mensuel de la Société nationale d'Acclimation de Paris (Paris).
- Bull. Soc. Angers*—Bulletin de la Société d'Études scientifiques d'Angers (Angers).
- Bull. Soc. Anthrop. Lyon*—Bulletin de la Société d'Anthropologie de Lyon.
- Bull. Soc. Anthrop. Paris*—Bulletin de la Société d'Anthropologie de Paris.
- Bull. Soc. Aude*—Bulletin de la Société d'Études scientifiques de l'Aude (Carcassonne).
- Bull. Soc. Autun*—Société d'Histoire Naturelle d'Autun.
- Bull. Soc. Belg. Micr.*—Bulletin de la Société Belge de Microscopie (Brussels). (Also *Annales*.)
- Bull. Soc. Béziers*—Bulletin de la Société d'Étude des Sciences Naturelles de Béziers. *Comptes rendus des Séances* (Béziers).
- Bull. Soc. Borda-Dax*—Bulletin de la Société de Borda (Dax).
- Bull. Soc. Coln.*—Bulletin de la Société d'Histoire Naturelle de Colmar.

- Bull. Soc. d'Elbeuf*.—Bulletin de la Société d'étude des sciences naturelles d'Elbeuf.
- Bull. Soc. Dinan*.—Bulletin de la Société des Naturalistes Dinantais (Dinant).
- Bull. Soc. Ent. Suisse*.—See *MT. Schn. ent. Ges.*
- Bull. Soc. Ent. Fr.*—Bulletin des séances de la Société Entomologique de France (Paris) (See *Ann.*).
- Bull. Soc. Finistère*.—Bulletin de la Société d'Etudes scientifiques du Finistère (Morlaix).
- Bull. Soc. Geogr.*—Bulletin de la Société de Géographie (Paris).
- Bull. Soc. Géol.*—Bulletin de la Société Géologique de France (Paris).
- Bull. Soc. Isère*.—Bulletin de la Société de statistique des sciences naturelles et des arts industriels du département de l'Isère (Grenoble).
- Bull. Soc. L. Bruxelles*.—Bulletin de la Société royale Linnéenne de Bruxelles.
- Bull. Soc. L. Nord France*.—Bulletin de la Société Linnéenne du Nord de la France (Amiens).
- Bull. Soc. L. Norm.*—Bulletin de la Société Linnéenne de Normandie (Caen).
- Bull. Soc. Mal. Fr.*—Bulletin de la Société Malacologique de France (Paris).
- Bull. Soc. Mal. Ital.*—Bullettino della Società Malacologica Italiana (Pisa).
- Bull. Soc. Metz*.—Bulletin de la Société d'Histoire Naturelle de Metz (formerly du Département de la Moselle).
- Bull. Soc. Murith*.—Bulletin des travaux de la Société Murithienne du Valais (Neuchâtel).
- Bull. Soc. Nancy*.—Bulletin de la Société des Sciences de Nancy (Paris).
- Bull. Soc. Neuchâtel*.—Bulletin de la Société des Sciences Naturelles de Neuchâtel.
- Bull. Soc. Nîmes*.—Bulletin de la Société d'étude des sciences naturelles de Nîmes (Nîmes).
- Bull. Soc. Ouest France*.—Bulletin de la Société des Sciences Naturelles de l'Ouest de la France (Paris).
- Bull. Soc. Philom.*—Bulletin de la Société Philomathique de Paris.
- Bull. Soc. Rouen*.—Bulletin de la Société des Amis des Sciences Naturelles de Rouen (Rouen).
- Bull. Soc. Saône*.—Bulletins de la Société des Sciences Naturelles de Saône-et-Loire (Chalons sur Saône.) (Also *Mem.*)
- Bull. Soc. Savoie*.—Bulletin de la Société d'Histoire Naturelle de Savoie (Chambéry).
- Bull. Soc. Sci. Phys. Nat. Toulouse*.—Bulletin de la Société des Sciences Physiques et Naturelles de Toulouse (Toulouse).
- Bull. Soc. Isère*.—Bulletin de la Société de Statistique des Sciences Naturelles, &c., du Département de l'Isère (Grenoble).

- Bull. Soc. Toulouse*.—Bulletin de la Société d'Histoire Naturelle de Toulouse.
- Bull. Soc. Vaud*.—Bulletin de la Société Vaudoise des Sciences Naturelles (Lausanne).
- Bull. Soc. Ven.-Trent*.—Bullettino della Società Veneto-Trentina di Scienze Naturali (Padua). (Also *Atti*.)
- Bull. Soc. Yonne*.—Bulletin de la Société des Sciences Historiques et Naturelles de l'Yonne (Auxerre).
- Bull. Soc. Z. Fr.*.—Bulletin de la Société Zoologique de France (Paris).
- Bull. U. S. Fish Comm.*.—Bulletin of the United States Fish Commission (Washington).
- Bull. U. S. Geol. Surv.*.—Bulletin of the United States Geological Survey (Washington).
- Bull. U. S. Nat. Mus.*.—Bulletin of the United States National Museum (Washington). (Also *Proceedings*.)
- Bull. Washb. Coll.*.—Bulletin of the Washburn Laboratory of Natural History (Topeka, Kansas).
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- Canad. Ent.*.—Canadian Entomologist (Saunders : Montreal).
- Can. Rec.*.—Canadian Record of Science.
- Cardiff Nat. Soc.*.—Cardiff Naturalists' Society. Report and Transactions (Cardiff).
- CB. Bakt. Parasit.*.—Centralblatt für Bakteriologie und Parasitenkunde (Uhlworn : Cassel).
- CB. Ges. Anthropol.*.—Correspondenzblatt der deutschen Gesellschaft für Anthropologie, &c. (Brunswick).
- CB. Iris*.—Correspondenz-Blatt des entomologischen Vereins Iris zu Dresden.
- CB. med. Wiss.*.—Centralblatt für die medicinischen Wissenschaften (Berlin).
- CB. Ver. Regensb.*.—(Now *Ber*.)
- CB. Ver. Rheinl.*.—Correspondenz-Blatt des naturhistorischen Vereins der preussischen Rheinlande und Westphalens (Bonn). (Also *Verh. & SB*.)
- CB. Ver. Riga*.—Correspondenzblatt des Naturforscher-Vereins zu Riga.
- Cellule*.—La Cellule. Recueil de Cytologie et d'Histologie Générale (Carnoy, Gilson, & Denys : Lierre & Gand).
- Circ. deutsch. Fisch. Ver.*.—Circulars des deutschen Fischerei-Vereins (Berlin).
- Comm. Ateneo Brescia*.—Commentari dell' Ateneo di Brescia.
- Conch. Mittheil.*.—Conchologische Mittheilungen (Martens : Cassel).
- ‡ *M. Mus. Geol. Princeton*.—Contributions from the E. M. Museumology, Princeton College, U.S.A. (Scott & Osborn).

- C.R.*—Comptes rendus des Séances hebdomadaires de l'Académie des Sciences (Paris).
- C.R. Ass. Fr. Sci.*—Compte-rendu de l'Association Française pour l'avancement des Sciences.
- C.R. Ent. Belg.*—Comptes rendus des Séances de la Société Entomologique de Belgique (Brussels).
- C.R. Soc. Biol.*—Comptes rendus hebdomadaires des Séances et Mémoires de la Société de Biologie (Paris).
- C.R. Soc. L. Bord.*—Comptes Rendus de la Société Linnéenne de Bordeaux. (Also *Actes*.)
- Dan. Selsk. Skr.*—K. Danske Videnskabernes Selskabs Skrifter (Copenhagen).
- Denk. Ak. Wien*—Denkschriften der k. Akademie der Wissenschaften zu Wien (Vienna). (Also *SB.*)
- Deutsche s. Z.*—Deutsche entomologische Zeitschrift (Kraatz : Berlin).
- Échange*—L'Échange, Revue Linnéenne, organe des Naturalistes de la région Lyonnaise.
- E. Mus. Lund.*—E museo Lundii En Samling Af Afhandlinger (Lütken : Kjøbenhavn).
- Ent.*—The Entomologist (London).
- Ent. Am.*—Entomologica Americana (Brooklyn).
- Ent. Gen.*—L'Entomologiste Genevois. Journal mensuel d'Entomologie pure et appliquée (Geneva).
- Ent. M. M.*—The Entomologist's Monthly Magazine (London).
- Ent. Med.*—Entomologiske Meddelelser udgivne af Entomologisk Forening ved Fr. Meinert Copenhagen.
- Ent. Nachr.*—Entomologische Nachrichten (Karsch : Berlin).
- Ent. Tidskr.*—Entomologisk Tidskrift, på föranstaltande af Entomologiska Föreningen i Stockholm (Spångberg : Stockholm).
- Ért. Term. Kör.*—Értekezések a természettudományok köréből, Magyar tudományos Akadémia [Memoirs on Natural Science, Hungarian Academy of Sciences] (Budapesth).
- Ess. Nat.*—Essex Naturalist : being the Journal, Transactions, and Proceedings of the Essex Field Club (Buckhurst Hill).
- Études d'Ent.*—Études d'Entomologie, Faunes Entomologiques, Descriptions d'Insectes nouveaux ou peu connus (C. Oberthür : Rennes).
- Evkön. Erd. Mus.*—Evkönyvek erdéli múzeumegylét (Kolozsvár = Klausenberg).
- Fauna*—Fauna. Comptes rendus des Sciences de la Société de Naturalistes Luxembourgais.
- Feuill. Nat.*—Feuille des Jeunes Naturalistes (Dollfus : Paris).
- Field*—The Field (London).

*Field Club*.—The Field Club, with which is incorporated The Garner (London).

*For. & Str.*—Forest and Stream.

*Förh. Selsk. Chr.*—Förhandlingar i Videnskabs-Selskabet i Christiania.

*Förh. Sk. Naturf.*—Förhandlingar vid de Skandinaviska Naturforskarnes.

*Frelon*.—Le Frelon, journal d'Entomologie.

*Garner*—The Garner, &c. (now Field Club, *q.v.*).

*Gef. Welt*—Die gefiederte Welt: Zeitschrift für Vogelliebhaber, -züchter und -händler (Russ: Berlin).

*Geol. Mag.*—Geological Magazine (Woodward: London).

*Giorn. Sci. Palerm.*—Giornale di Scienze Naturali ed Economiche di Palermo.

*Göteborgs Handl.*—Göteborgs kongl. Vetenskaps och Vitterhets samhälles Handlingar.

*Helios*—See *Mon. MT. Ver. Naturw. Frankfurt-a-O.*

*Hist. Berwick Nat. Club*—History of the Berwickshire Naturalists' Club (Alnwick).

*Hor. Ent. Ross.*—Horæ Societatis Entomologicæ Rossicæ (St. Petersburg).

*Humming Bird*.—The Humming Bird (Boucard: London).

*Ibis*—The Ibis (Selater: London).

*Ind. Mus. Notes*—Indian Museum Notes (Calcutta).

*Ins. Life*—Insect Life (Washington).

*Int. J. Micr.*—The International Journal of Microscopy & Natural Science (Allen & Spiers: London & New York).

*Irish Natural.*—The Irish Naturalist.

*Izvest. Mosc. Univ.*—Izvestiya imperatorskova obshchestva lyubitelei Estestvoznaniya, Antropologi i Etnografii Sostoyashova, pre Moskovskom Universitet.

*J. Ac. Philad.*—Journal of the Academy of Natural Sciences of Philadelphia.

*J. Agric. Soc. India*—Journal of the Agricultural and Horticultural Society of India (Calcutta).

*J. Anat. Phys.*—Journal of Anatomy and Physiology (London).

*J. A. S. B.*—Journal of the Asiatic Society of Bengal (Calcutta).

*J. A. S. (Bombay)*—Journal of the Bombay Branch of the Royal Asiatic Society.

*J. A. S. (Ceylon)*—Journal of the Ceylon Branch of the Royal Asiatic Society.

*J. A. S. (China)*—Journal of the China Branch of the Royal Asiatic Society.

*J. A. S. (Straits)*—Journal of the Straits Branch of the Royal Asiatic Society (Singapore).

- JB. Ak. Amst.*—Jaarboek van de k. Akademie van Wetenschappen (Amsterdam). (Also *Verhandl.*)
- JB. Mijnwezen*—Jaarboek van het Mijnwezen in Nederlandsch Oost-Indië (Amsterdam).
- JB. geol. Reichsanst.*—Jahrbuch der k.-k. geologischen Reichsanstalt (Vienna). (Also *Verhandl.*)
- JB. Hamb.*—Jahrbuch der Hamburgischen wissenschaftlichen Anstalten.
- JB. Karpath. Ver.*—Jahrbuch des Ungarischen Karpathen-Vereins (Késmark).
- JB. k. Akad. Erfurt*—Jahrbücher der königlichen Akademie gemeinnütziger Wissenschaften zu Erfurt.
- JB. k. preuss. geol. Landesanst.*—Jahrbuch der königlich preussischen geologischen Landesanstalt und Bergakademie zu Berlin.
- JB. mal. Ges.*—Jahrbuch der deutschen malakozoologischen Gesellschaft (Kobelt: Frankfurt).
- JB. Mineral.*—Neues Jahrbuch für Mineralogie, Geologie, und Paläontologie (Leonard & Geinitz: Leipzig).
- JB. Mijnwezen Nederl. Indie*—Jaarboek van het Mijnwezen van Nederl. Oost Indie (Amsterdam).
- JB. Mus. Kärnt.*—Jahrbuch des naturhistorischen Landesmuseums von Kärnthén (Klagenfurt).
- JB. nass. Ver.*—Jahrbuch des nassanischen Vereins für Naturkunde (Wiesbaden).
- JB. Sieb. Kurpath. Ver.*—Jahrbuch des Siebenbürgischen Karpathen-Vereins (Hermannstadt).
- Jahresber. först.-phän. Stat.*—Jahresbericht der fürstlich-phänologischen Stationen Deutschlands (Berlin).
- J. Ber. Annab. Ver.*—Jahresbericht des Annaberg-Buchholzer Vereins für Naturkunde (Annaberg).
- J. Ber. Ges. Graub.*—Jahresbericht der naturforschenden Gesellschaft Graubündens (Chur).
- J. Ber. Ges. Hannov.*—Jahresbericht der naturforschenden Gesellschaft in Hannover.
- J. Ber. k. Böhm. Ges. Wiss.*—Jahresbericht der königlich Böhmisches Gesellschaft der Wissenschaften.
- J. Ber. Pollichia*—Jahresbericht der Pollichia eines naturwissenschaftlichen Vereins der Rheinpfalz (Dürkheim a. d. Hart).
- J. Ber. Schles. Ges.*—Jahresbericht der Schlesischen Gesellschaft für vaterländische Cultur (Breslau). (Also *Abhandl.*)
- J. Ber. Ver. Braunsch.*—Jahresbericht des Vereins für Naturwissenschaft zu Braunschweig (Brunswick).
- J. Ber. Ver. Frankfurt*—Jahresbericht des physikalischen Vereins zu Frankfurt-am-Main.
- J. Ber. Ver. Magdeburg*—Jahresbericht und Abhandlungen des naturwissenschaftlichen Vereins in Magdeburg.



- J. Ber. Ver. Osnabr.*—Jahresbericht des naturwissenschaftlichen Vereins zu Osnabrück.
- J. Ber. Ver. Zwickau*—Jahresbericht des Vereins für Naturkunde zu Zwickau.
- J. Ber. Westf. Ver.*—Jahresbericht der zoologischen Sektion des Westfälischen provincial-Vereins für Wissenschaft und Kunst (Münster).
- J. Bomb. N. H. Soc.*—The Journal of the Bombay Natural History Society (Phipson : Bombay).
- J. Brit. Dent. Ass.*—Journal of the British Dental Association (London).
- J. Cincinn. Soc.*—Journal of the Cincinnati Society of Natural History.
- J. Coll. Sci. Japan*—Journal of the College of Science, Imperial University, Japan (Tôkyô).
- J. de Conch.*—Journal de Conchyliologie (Crosse & Fischer : Paris).
- J. de l'Anat. Phys.*—Journal de l'Anatomie et de la Physiologie (Pouchet : Paris).
- J. Elisha Mitchell Sci. Soc.*—Journal of the Elisha Mitchell Scientific Society (Raleigh, N.C.).
- Jen. Z. Nat.*—Jenaische Zeitschrift für Naturwissenschaft, herausgegeben von der medicinisch-naturwissenschaftlichen Gesellschaft zu Jena.
- J. f. O.*—Journal für Ornithologie (Cabanis : Leipzig).
- JH. Ver. Lüneb.*—Jahreshefte des naturwissenschaftlichen Vereins für das Fürstenthum Lüneburg.
- JH. Ver. Württ.*—Jahreshefte des Vereins für vaterländische Naturkunde in Württemberg (Stuttgart).
- J. Inst. Jamaica*—Journal of the Institute of Jamaica (Kingston).
- J. L. S.*—Journal of the Linnean Society ; Zoology (London).
- J. London Coll. Soc.*—Journal of the City of London College Society, London (Lewes).
- J. Mar. Biol. Ass.*—Journal of the Marine Biological Association (London & Plymouth).
- J. Morph.*—Journal of Morphology (Whitman & Allis : Boston, U.S.A.).
- J. Microgr.*—Journal de Micrographie (Pellétan : Paris).
- J. New Jersey N. H. Soc.*—Journal of the New Jersey Natural History Society (Trenton). (Formerly *J. Trenton Soc.*)
- J. Northampt. Soc.*—Journal of the Northamptonshire Natural History Society and Field Club.
- J. N. Y. Micr. Soc.*—Journal of the New York Microscopical Society (New York).
- J. of Conch.*—Journal [formerly Quarterly Journal] of Conchology (London).
- Johns Hopk. Univ. Circ.*—Johns Hopkins University Circulars (Baltimore).
- J. Physiol.*—The Journal of Physiology (Foster et alii : Cambridge).
- J. Quek. Club*—Journal of the Quekett Microscopical Club (London).

- J. R. Agric. Soc.*—Journal of the Royal Agricultural Society (London).  
*J. R. Inst. Cornwall*—Journal of the Royal Institution of Cornwall (Truro).  
*J. R. Micr. Soc.*—Journal of the Royal Microscopical Society (London).  
*J. R. Geol. Soc. Ireland*—Journal of the Royal Geological Society of Ireland (London, Dublin, and Edinburgh).  
*J. R. Soc. N. S. W.*—Journal and Proceedings of the Royal Society of New South Wales (Sydney).  
*J. Sci. Lisb.*—Jornal de Sciencias, &c., da Academia de Lisboa (Lisbon).  
*J. Tr. Vict. Inst.*—Journal of the Transactions of the Victoria Institute, or Philosophical Society of Great Britain (London).  
*Kansas quart.*—The Kansas University quarterly.  
*Kansas Scient.*—The Kansas City Scientist (Kansas). (Formerly *The Naturalist*).  
*Kosmos Lemberg*—Kosmos : Lemberg.  
*L'Ab.*—L'Abeille (Paris).  
*La Nature*—La Nature, Revue des Sciences, &c. (Tissandier : Paris).  
*L'Anthrop.*—L'Anthropologie (Paris).  
*Le Nat.*—Le Naturaliste (Deyrolle : Paris).  
*Leopoldina*—Leopoldina : Ämtlichen Organ für der k. Leopold-Carol. deutsch. Acad.  
*Lioar Man.*—Yn Lioar Manninagh. Published quarterly, for The Isle of Man Natural History and Antiquarian Society (Kermode : Ramsey).  
*Lotos*—Lotos, Jahrbuch für Naturwissenschaft im Auftrage des Vereines 'Lotos' (Prague).  
*Maandbl. Natuurw.*—Maandblad voor Naturwetenschappen (Amsterdam).  
*Mal. Bl.*—Malakozoologische Blätter (Clessin : Cassel).  
*Math. Nat. Ber. Ung.*—Mathematische und naturwissenschaftliche Berichte aus Ungarn. Mit Unterstützung der Ungarischen Akad. d. Wiss. und der K. Ungar. naturwiss. Ges. herausgegeben von Baron B. Eötvös, &c. (Fröhlich : Buda-Pest).  
*Math. term. Ért.*—Mathematikai és természettudományi Értesítő (Gyula : Buda-Pesth).  
*Math. term. köz.*—Mathematikai és természettudományi közlemények (Buda-Pest).  
*Med. Nat.*—The Mediterranean Naturalist (Cooke : Malta).  
*Med. Soc. Fenn.*—Meddelanden af Societas pro Fauna et Flora Fennica (Helsingfors).  
*Mél. biol.*—Mélanges biologiques tirés du Bulletin de l'Académie impériale des Sciences de St. Petersburg.  
*Mem. Ac. Barcel.*—Memorias de la real Academia de Ciencias de Barcelona.

- Mém. Ac. Belg.*—Mémoires de l'Académie royale des Sciences, des Lettres, et des Beaux Arts de Belgique (Brussels). (Also *Bull.*)
- Mem. Acc. Bologn.*—Memorie della R. Accademia delle Scienze dell'Istituto di Bologna.
- Mém. Ac. Dijon*—Mémoires de l'Académie des Sciences, Arts, et Belles-Lettres de Dijon.
- Mém. Ac. Lyon*—Mémoires de l'Académie des Sciences, Belles-Lettres et Arts de Lyon (Lyon).
- Mem. Ac. Madrid*—Memorias de la real Academia de Ciencias Exactas Físicas, y Naturales de Madrid (Madrid).
- Mem. Acc. Mod.*—Memorie delle R. Accademia di Scienze, Lettere, ed Arti in Modena.
- Mém. Ac. Montp.*—Mémoires de la Section des Sciences de l'Académie des Sciences et Lettres de Montpellier.
- Mém. Ac. Pétersb.* (7)—Mémoires de l'Académie impériale des Sciences de St. Pétersbourg. 7me série.
- Mém. Ac. Savoie*—Mémoires de l'Académie des Sciences, Belles-Lettres, et Arts de Savoie (Chambéry). (Also *Comptes Rendus.*)
- Mém. Ac. Sci.*—Mémoires de l'Académie des Sciences (Paris).
- Mem. Ac. Sci. Lisboa*—Memorias da Academia real das Sciencias de Lisboa.
- Mem. Acc. Tor.*—Memorie della R. Accademia delle Scienze di Torino (Turin).
- Mém. Ac. Toulouse*—Mémoires de l'Académie des Sciences, &c., de Toulouse.
- Mém. Ac. Vaucluse*—Mémoires de l'Académie de Vaucluse (Avignon).
- Mem. Am. Ac.*—Memoirs of the American Academy of Arts and Sciences (Cambridge). (Also *Proceedings.*)
- Mem. Boll. Soc. Geogr. Ital.*—Memorie (Bollettino) della Società Geografica Italiana (Rome).
- Mem. Bost. Soc.*—Memoirs of the Boston Society of Natural History. (Also *Proceedings.*)
- Mem. California Acad.*—Memoirs of the Californian Academy of Sciences (San Francisco).
- Mém. Cour. Ac. Belg.* 4to.—Mémoires Couronnés et Mémoires des Savants Étrangers, publiés par l'Académie Royale des Sciences, des Lettres et des Beaux Arts de Belgique.
- Mém. Cour. Ac. Belg.* 8vo.—*Ibid.* 8vo.
- Mém. Inst. Génév.*—Mémoires de l'Institut national Genévois (Geneva).
- Mem. Ist. Lomb.*—Memorie del R. Istituto Lombardo di Scienze e Lettere (Milan).
- Mem. Ist. Venet.*—Memorie del R. Istituto Veneto di Scienze, &c. (Venice).
- Mém. Liège*—Mémoires de la Société royale des Sciences de Liège.
- Mem. Mus. C. Z.*—Memoirs of the Museum of Comparative Zoology at Harvard College (Cambridge, U.S.A.).

- Mem. Nat. Ac. Sci.*—Memoirs of the National Academy of Sciences (Washington).
- Mém.-prés. Ac. Sci.*—Mémoires présentés par divers savants à l'Académie des Sciences de l'Institut de France (Paris).
- Mém. Soc. Biol.*—(See *C.B.*)
- Mém. Soc. Bord.*—Mémoires de la Société des Sciences Physiques et Naturelles de Bordeaux.
- Mém. Soc. Cannes*—Mémoires de la Société des Sciences Naturelles et Historiques des Lettres et des Beaux-Arts de Cannes et de l'Arrondissement de Grasse (Cannes).
- Mém. Soc. Cherb.*—Mémoires de la Société nationale des Sciences Naturelles et Mathématiques de Cherbourg.
- Mém. Soc. Géol.*—Mémoires de la Société Géologique de France (Paris).
- Mém. Soc. Hainault*—Mémoires et publications de la Société des Sciences, des Arts, et des Lettres du Hainault (Mons).
- Mém. Soc. Lille*—Mémoires de la Société de l'Agriculture et des Arts de Lille.
- Mém. Soc. L. N. Fr.*—Mémoires de la Société Linnéenne du Nord de la France (Amiens).
- Mém. Soc. Maine et Loire*—Mémoires de la Société académique de Maine et Loire (Angers).
- Mem. Soc. Manch.*—Memoirs and Proceedings of the Manchester Literary and Philosophical Society (London).
- Mém. Soc. Oise*—Mémoires de la Société académique d'Archéolo des Sciences et Arts du département de l'Oise.
- Mém. Soc. Phys. Genève*—Mémoires de la Société de Physique et d'Histoire Naturelle de Genève.
- Mém. Soc. Saône*—Mémoires de la Société des Sciences Naturelles de Saône-et-Loire (Chalon-sur-Saône). (Also *Bulletin*.)
- Mém. Soc. Seine & Oise*—Mémoires de la Société des Sciences Naturelles et Médicales de Seine-et-Oise (Versailles).
- Mém. Soc. Zool.*—Mémoires de la Société Zoologique de France (Paris).
- Mid. Nat.*—The Midland Naturalist (Badger & Hillhouse: London & Birmingham).
- Monit. Zool. Ital.*—Monitore Zoologico Italiano (Chiarugi & Ficalbi: Florence.)
- Month. Int. J. Anat. Hist.*—Monthly International Journal of Anatomy and Histology (Paris, Leipsic, London).
- Morph. JB.*—Morphologisches Jahrbuch: eine Zeitschrift für Anatomie und Entwicklungsgeschichte (Gegenbaur: Leipzig).
- MT. Aargau. nat. Ges.*—Mittheilungen der Aargauischen naturforschenden Gesellschaft.

- MT. embr. Inst. Wien (n.s.)*—Mittheilungen aus dem embryologischen Institute der k. k. Universität in Wien. New series (Schenck : Vienna).
- MT. Ges. Bern*—Mittheilungen der naturforschenden Gesellschaft in Bern.
- MT. min. geol. Mus. Dresden*—Mittheilungen aus dem k. mineralogisch-geologischen und prähistorischen Museum in Dresden.
- MT. orn. Ver. Wien*—Mittheilungen des ornithologischen Vereins in Wien (Vienna).
- MT. Osterlande*—Mittheilungen aus dem Osterlande (Altenburg).
- MT. Schw. ent. Ges.*—Mittheilungen der Schweizerischen entomologischen Gesellschaft (Schaffhausen). (Also with French title.)
- MT. Ung. geol. Anst.*—Mittheilungen aus dem Jahrbuche der k. Ungarischen geologischen Anstalt (Buda-Pest).
- MT. Ver. Steierm.*—Mittheilungen des naturwissenschaftlichen Vereins für Steiermark (Graz).
- MT. Vorpomm.*—Mittheilungen aus dem naturwissenschaftlichen Vereine von Neu-Vorpommern und Rügen (Griefswald).
- MT. z. Stat. Neap.*—Mittheilungen aus der zoologischen Station in Neapel (Leipzig).
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- N. Act. Ups.*—Nova Acta R. Societatis Scientiarum Upsaliensis (Upsala).
- N. Acta Ac. L.-C. Nat. cur.*—Nova Acta Academiæ Cæs. Leopoldino-Carolinæ Germaniæ Naturæ curiosorum (Leipzig). (Also *Verhandlungen der k. Leop. Carol. deutschen Acad. d. Naturf.*)
- N. Arch. Mus.*—Nouvelles Archives du Muséum d'Histoire Naturelle (Paris).
- N. Denk. Schv. Ges.*—Neue Denkschriften der allgemeinen Schweizerischen Gesellschaft für die gesammten Naturwissenschaften.
- N. Mém. Soc. Helv.*—Nouveaux Mémoires de la Société Helvétique des Sciences Naturelles (Lausanne).
- N. Mém. Soc. imp. Moscou*—Nouveaux Mémoires de la Société impériale des Naturalistes de Moscou.
- N. Z. J. Sci.*—The New Zealand Journal of Science (Dunedin).
- Nachr. Ges. Götting.*—Nachrichten von der k. Gesellschaft der Wissenschaften und der Georg Auguste Universität zu Göttingen.
- Nachr. mal. Ges.*—Nachrichtsblatt der deutschen malakozologischen Gesellschaft (Frankfort).
- Nat. Canad.*—Le Naturaliste Canadien (Provancher: Cap Rouge, Quebec).
- Nat.-Hist. Tr. North. Durham*—Natural-History Transactions of Northumberland, Durham, and Newcastle-on-Tyne (London & Newcastle).

- Nat. Mex.*—La Naturaleza (Mexico).
- Nat. Sicil.*—Il Naturalista Siciliano: Giornale delle Scienze Naturali (Ragusa: Palermo).
- Nat. Tijdschr. Nederl. Ind.*—Natuurkundig Tijdschrift voor Nederlandsche Indie (Batavia).
- Nat. Notes*—Nature Notes, The Selborne Society's Magazine (Britten: London).
- Naturalist*—The Naturalist: Journal of the Yorkshire Naturalists' Union, &c. A Monthly Journal of Natural History for North of England (Roebuck & Clarke: London & Leeds).
- Natural Sci.*—Natural Science: a Monthly Review of Scientific Progress.
- Nature*—Nature (London).
- Nat. Ver. Haarlem*—Natuurkundige Verhandelingen van de Hollandsche Maatschappij der Wetenschappen te Haarlem (Haarlem).
- Nat. Ver. Utrecht*—Natuurkundige Verhandelingen Provinciaal Utrechtsch genootschap van Kunsten en Wetenschappen (Utrecht).
- Naut.*—The Nautilus (Pilsbry & Averell: Philadelphia).
- Neujahrsbl. Naturf. Ges.*—Neujahrsblatt herausgegeben von der Naturforschenden Gesellschaft (Zurich).
- Nor. Selsk. Skr.*—K. Norske Videnskabernes Selskabs Skrifter (Thronhjelm).
- Notes Leyd. Mus.*—Notes from the Royal Zoological Museum of the Netherlands at Leyden (Jentink).
- Notizbl. Ver. Erdk. Darmstadt*—Notizblatt des Vereins für Erdkunde zu Darmstadt.
- Nunq. ot.*—Nunquam otiosus (Schaufuss: Dresden).
- Nyt. Mag. Nature.*—Nyt Magazin for Naturvidenskaberne (Danielssen et alii: Christiania).
- Öfv. Ak. Förh.*—Öfversigt af k. Vetenskaps Akademiens Förhandlingar (Stockholm).
- Öfv. Finska Förh.*—Öfversigt af Finska Vetenskaps Societetens Förhandlingar (Helsingfors).
- Orn. JB.*—Ornithologisches Jahrbuch. Organ für die paläarktische Faunengebiet.
- Orn. MB.*—Ornithologische Monatsberichte herausgegeben von Dr. A. Reichenow, Berlin.
- Orn. Ool.*—Ornithologist & Oologist (Pawtucket, R. I.).
- Ornis*—Ornis: Internationale Zeitschrift für die gesamte Ornithologie (Blasius & Hayek: Vienna).
- Orvos-termesz. Értesítő.*—Orvos-termeszettudományi Értesítő (Kolozsvar = Klausenberg).
- Ottawa Nat.*—The Ottawa Naturalist. The Transactions of the Ottawa Field Naturalists' Club (Ottawa).

- Overs. Dan. Selsk.*—Oversigt over det k. Danske Videnskabernes Selskabs Forhandlinger (Copenhagen).
- P. Ac. Philad.*—Proceedings of the Academy of Natural Sciences of Philadelphia.
- P. Am. Ac.*—Proceedings of the American Academy of Arts and Sciences (Boston). (Also *Mem.*)
- P. Am. Ass.*—Proceedings of the American Association for the Advancement of Science. (Also *Mem.*)
- P. Am. Micr. Soc.*—Proceedings of the American Society of Microscopists (Buffalo).
- P. Am. Phil. Soc.*—Proceedings of the American Philosophical Society, &c. (Philadelphia). (Also *Trans.*)
- Pap. Soc. Brit. Columb.*—Papers and communications read before the Natural History Society of British Columbia (Victoria, B. C.).
- P. A. S. B.*—Proceedings of the Asiatic Society of Bengal (Calcutta).
- P. Bath. N. H. Soc.*—Proceedings of the Bath Natural History and Antiquarian Field Club.
- P. Belf. Soc.*—(See *Report.*)
- P. Biol. Soc. Washington*—Proceedings of the Biological Society of Washington.
- P. Birmingh. Phil. Soc.*—Proceedings of the Birmingham Philosophical Society.
- P. Birmingh. Soc.*—(See *Report.*)
- P. Bost. Soc.*—Proceedings of the Boston Society of Natural History (Boston, U.S.A.) (Also *Mem.*)
- P. Bristol Soc.*—Proceedings of the Bristol Naturalists' Society.
- P. Cal. Ac. Sci.*—Proceedings of the Californian Academy of Sciences (San Francisco). (Also *Trans.* and *Occas. Papers.*)
- P. Cambr. Phil. Soc.*—Proceedings of the Philosophical Society, Cambridge. (Also *Trans.*)
- P. Colorado Soc.*—Proceedings of the Colorado Scientific Society (Denver).
- P. Cottessw. Nat. F. C.*—Proceedings of the Cottesswold Naturalists' Field Club (Gloucester).
- P. Croydon Club*—Proceedings of the Croydon Microscopical and Natural History Club.
- P. Davenport Ac.*—Proceedings of the Davenport Academy of Natural Sciences (Davenport, Iowa).
- P. Dorset Field Club*—Proceedings of the Dorset Natural History and Antiquarian Field Club (Sherborne).
- P. E. Soc.*—Proceedings of the Entomological Society of London.
- P. E. Soc. Wash.*—Proceedings of the Entomological Society of Washington.

- P. Folkestone Soc.*—Proceedings of the Folkestone Natural History Society.
- P. Geol. Ass.*—Proceedings of the Geologists' Association (London).
- P. Hampshire Club*—Papers and Proceedings of the Hampshire Field Club (Southampton).
- P. Holmesdale Nat. Hist. Club*—Proceedings of the Holmesdale Natural History Club (London).
- P. Linn. Soc. N.S.W.*—Proceedings of the Linnean Society of New South Wales (Sydney).
- P. Liverp. Biol. Soc.*—Proceedings of the Liverpool Biological Society.
- P. Liverp. Field Club*—Proceedings of the Liverpool Naturalists' Field Club.
- P. Liverp. Soc.*—Proceedings of the Literary and Philosophical Society of Liverpool.
- P. London Amateur Soc.*—Proceedings of the London Amateur Scientific Society. Metropolitan Scientific Association and Society of Amateur Geologists (London).
- P. Newport Nat. Hist. Soc.*—Proceedings of the Newport Natural History Society.
- P. N. H. Soc. Glasg.*—Proceedings of the Natural History Society of Glasgow.
- P. N.-Scot. Inst.*—Proceedings and Transactions of the Nova-Scotian Institute of Natural Science (Halifax, N.-S.).
- P. Phil. Soc. Glasg.*—Proceedings of the Philosophical Society of Glasgow.
- P. Phys. Soc. Edinb.*—Proceedings of the Royal Physical Society of Edinburgh.
- P. Rochester Acad.*—Proceedings of the Rochester Academy of Science (Rochester, N.Y.).
- P. B. Inst.*—Proceedings of the Royal Institution of Great Britain (London).
- P. R. Irish Ac.*—Proceedings of the Royal Irish Academy (Dublin).
- P. R. Soc.*—Proceedings of the Royal Society (London).
- P. R. Soc. Edinb.*—Proceedings of the Royal Society of Edinburgh. (Also *Trans.*)
- P. R. Soc. Queensl.*—Proceedings of the Royal Society of Queensland (Brisbane).
- P. R. Soc. Tasm.*—Papers and Proceedings and Reports of the Royal Society of Tasmania (Hobart).
- P. R. Soc. Vict.*—Proceedings of the Royal Society of Victoria (Melbourne). (Also *Trans.*)
- P. Soc. Manch.*—(See *Mem.*)
- P. Somerset. Soc.*—Proceedings of the Somersetshire Archæological and Natural History Society. New series (Taunton).



- P. Tr. Croydon Nat. Hist. Club*.—Proceedings and Transactions of the Croydon Microscopical and Natural History Club (Croydon).
- P. U. S. Nat. Mus.*.—Proceedings of the United States National Museum (Washington). (Also *Bull.*)
- P.-v. Soc. Mal. Belg.*.—Procès-verbaux des séances de la Société Malacologique de Belgique (Brussels).
- P.-v. Soc. Tosc.*.—Processi verbali della Società Toscana delle Scienze Naturali (Pisa).
- P. Warwick. Club*.—Proceedings of the Warwickshire Naturalists' and Archæologists' Field Club (Warwick).
- P. Z. S.*.—Proceedings of the Zoological Society (London). (Also *Trans.*)
- Pal. Abh.*.—Palæontologische Abhandlungen (Dames & Kayser : Berlin).
- Palæontogr.*.—Palæontographica : Beiträge zur Naturgeschichte der Vorwelt (Cassel).
- Pal. Ind.*.—Palæontologia Indica. (4to) Memoirs of the Geological Survey of India (Calcutta).
- Pal. Soc.*.—Monographs of the Palæontological Society.
- Pam. Akad. umiej. wydz. przyr. Krakau*.—Pamiętnik Akademii Umiejetnosci w Krakowie. Wydział matem. przyr. (Cracow).
- Pam. Fizjogr.*.—Pamiętnik Fizjograficzny (Warsaw).
- Phil. Tr.*.—Philosophical Transactions of the Royal Society (London). (Also *Proc.*)
- Preisschr. Jblonovsk. Gesells. Leipsig*.—Preisschriften gekrönt und herausgegeben von der fürstlich Jablonovski'schen Gesellschaft zu Leipsig.
- Prodr. Zool. Vict.*.—Prodromus of the Zoology of Victoria (McCoy : Melbourne).
- Protok. obsch. estest. Kazan*.—Protokolui zasjedaniï obshchestva estestvoisputitatelei pri Imperatorskom Kazanskom Universitetye.
- Psyche*.—Psyche, a Journal of Entomology. Published by the Cambridge Entomological Club (Cambridge, Mass., U.S.A.).
- Q. J. Geol. Soc.*.—Quarterly Journal of the Geological Society (London).
- Q. J. Micr. Sci.*.—Quarterly Journal of Microscopical Science (Lankester et alii : London).
- Rad jugoslav. akad.*.—Rad jugoslavenske akademije znanosti i umjetnosti (Zagreb). [Transactions of the South Slav Academy of Science and Art.]
- Rec. Austral. Mus.*.—Records of the Australian Museum (Ramsay : Sydney).
- Rec. Geol. Surv. Ind.*.—Records of the Geological Survey of India (Calcutta).
- Rec. Z. Suisse*.—Recueil Zoologique Suisse (Fol : Geneva & Bâle).

- Rend. Acc. Nap.*—Rendiconto dell' Accademia delle Scienze Fisiche e Matematiche (Sezione della Società reale di Napoli).
- Rend. Ist. Lombardo*—Rendiconti del R. Istituto Lombardo delle Scienze e Lettere (Milan).
- Rep. Austr. Ass.*—Reports of the Australasian Association for the Advancement of Science.
- Rep. Austr. Zool. Soc.*—Report of the South Australian Zoological and Acclimatization Society (Adelaide).
- Rep. Belfast Field Club*—Annual Report and Proceedings of the Belfast Naturalists' Field Club.
- Rep. Brighton Soc.*—Annual Report and Abstract of Proceedings of the Brighton and Sussex Natural History Society (Brighton).
- Rep. Brit. Ass.*—Report of the British Association for the Advancement of Science.
- Rep. Cornell Univ. Stat.*—Report of the Department of Entomology of the Cornell University Experiment Station (Comstock: Ithaca, N.Y.).
- Rep. Cornwall Polytechn.*—Reports of the Royal Polytechnical Society of Cornwall.
- Rep. Dep. Agric. Ent.*—Report of the Entomologist. From the Annual Report of the Department of Agriculture (Washington).
- Rep. E. Soc. Ont.*—Report of the Entomological Society of the Province of Ontario.
- Rep. Felsted Soc.*—Report of the Felsted School Natural History Society (Chelmsford).
- Rep. Fish. Scotl.*—Annual Report of the Fishery Board for Scotland (London, Edinburgh, & Dublin).
- Rep. Geol. Surv. Canada*—Report of the Geological and Natural History Survey and Museum of Canada (Montreal).
- Rep. Guernsey Soc.*—Report and Transactions; Guernsey Society of Natural Science and Local Research.
- Rep. Ins. Illin.*—Annual Report of the Noxious and Beneficial Insects of the State of Illinois (Springfield).
- Rep. Ins. N. York*—Annual Report of the Injurious and other Insects of New York (Lintner: Albany).
- Rep. Leeds Soc.*—Leeds Philosophical and Literary Society. The Annual Report (Leeds).
- Rep. Marl. Coll. Soc.*—Report of the Marlborough College Natural History Society.
- Rep. N. Staffordsh. Club*—North Staffordshire Naturalists' Field Club and Archæological Society. Annual Report and Transactions.
- Rep. N. Y. Mus.*—Annual Report of the New York State Museum of Natural History (Albany).
- Rep. & P. Belfast N. H. Soc.*—Report and Proceedings of the Belfast Natural History and Philosophical Society.

- Rep. Penzance Soc.*—Report and Transactions of the Penzance Natural History and Antiquarian Society.
- Rep. Plym. Inst.*—Annual Report and Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society (Plymouth).
- Rep. Rugby Soc.*—Report of the Rugby School Natural History Society.
- Rep. Southport Soc.*—The . . . Report of the Southport Society of Natural Science.
- Rep. Tr. Devon Ass.*—Report and Transactions of the Devonshire Association for the Advancement of Science, &c. (Plymouth).
- Rep. U. S. Ent. Comm.*—Report of the United States Entomological Commission (Washington).
- Rep. U. S. Fish. Comm.*—Report of the Commissioner, United States Commission of Fish and Fisheries (Washington).
- Rep. U. S. Geol. Surv.*—Annual Report of the United States Geological Survey (Washington).
- Rep. U. S. Nat. Mus.*—Annual Report of the Board of Regents of the Smithsonian Institution. Report of the National Museum (Washington).
- Rep. Wellington Soc.*—Report of the Wellington College Natural Science Society (Wellington Coll.).
- Rep. Yorks. Phil. Soc.*—Report of the Council of the Yorkshire Philosophical Society.
- Rev. Arg. Hist. Nat.*—Revista Argentina de Historia Natural. (Ameghino : Buenos Ayres.)
- Rev. Biol.*—Revue Biologique du Nord de la France (Barrois, Hallex, Moniez : Lille).
- Rev. Cien. Madrid*—Revista de los progresos de las Ciencias Exactas, Físicas, y Naturales (Madrid).
- Rev. Cient. Univ. Venezuela*—Revista Científica mensual de la Universidad Central de Venezuela (Caracas).
- Rev. d'Ent.*—Revue d'Entomologie, publié par la Société Française d'Entomologie (Fauvel : Caen).
- Rev. Mus. la Plata*—Revista del Museo de la Plata (Ameghino : la Plata).
- Rev. Quest. Sci.*—Revue des Questions Scientifiques publiée par la Société scientifique de Bruxelles (Brussels).
- Rev. Sci.*—Revue Scientifique de la France et de l'Étranger (Paris).
- Rev. Sci. Bourb.*—Revue Scientifique du Bourbonnais et du centre de la France (Olivier : Moulins).
- Rev. Sci. Nat. Oporto*—Revista de Ciencias Naturaes e Socias (Severo & Peixoto : Porto).
- Rev. Sci. Nat. Ouest*—Revue des Sciences Naturelles de l'Ouest (Paris).
- Rev. Sci. Nat. St. Pétersb.*—Revue des Sciences naturelles. Publiée par la Société des Naturalistes à St. Pétersbourg (St. Petersburg).

*Rev. Soc. Porto*—Revista da Societa de Instrucção de Porto (Oporto).  
*Rev. Tierheilkunde*—Revue für Tierheilkunde und Tierzucht (Vienna).  
*Rev. Tr. Sci.*—Revue des Travaux Scientifiques (Paris).  
*Rev. Zool.*—Revue Zoologique.  
*Riv. Ital. Sci. Nat.*—Rivista italiana di Scienze Naturali e Bollettino del Naturalista Collettore, Allevatore, Coltivatore (Brogi : Siena).  
*Rochester Nat.*—The Rochester Naturalist (Rochester).

*S. E. Z.*—Stettiner entomologische Zeitung (Dohrn : Stettin).  
*Samm. Geol. Mus. Leid.*—Sammlungen des Geologischen Reichsmuseums in Leiden.  
*Samm. naturw. Vorträge*—Sammlung naturwissenschaftlicher Vorträge (Huth : Berlin.)  
*SB. Ak. Berlin*—Sitzungsberichte der königlich Preussischen Akademie der Wissenschaften zu Berlin (formerly Bericht and Monatsbericht). (Also *Abhandl.*)  
*SB. Ak. Wien*—Sitzungsberichte der mathematische-naturwissenschaftlichen Classe der k. Akademie der Wissenschaften (Vienna). (Also *Denkschriften.*)  
*SB. Bayer. Ak.*—Sitzungsberichte der mathematisch-physikalischen Classe der k. Bayerischen Akademie der Wissenschaften (Munich). (Also *Abhandl.*)  
*SB. Böhm. Ges.*—Sitzungsberichte der k. Böhmisches Gesellschaft der Wissenschaften (Prague). (Also *Abhandl.*)  
*SB. Ges. Dorp.*—Sitzungsberichte der Naturforscher-Gesellschaft bei der Universität Dorpat (Dragendorff : Dorpat). (Also *Schriften.*)  
*SB. Ges. Isis*—Sitzungsberichte und Abhandlungen der naturwissenschaftlichen Gesellschaft 'Isis' (Dresden). (Also *Abhandl.*)  
*SB. Ges. Königsb.*—Sitzungsberichte der k. physikalisch-ökonomischen Gesellschaft in Preussen (Königsberg). (See *Schr. Ges. Königsb.*)  
*SB. Ges. Leipzig*—Sitzungsberichte der naturforschenden Gesellschaft zu Leipzig.  
*SB. Ges. Marb.*—Sitzungsberichte der Gesellschaft zur Beförderung der gesammten Naturwissenschaften zu Marburg.  
*SB. Ges. Morph.*—Sitzungsberichte der Gesellschaft für Morphologie und Physiologie in München (Munich).  
*SB. Ges. Würzb.*—Sitzungsberichte des physikalisch-medicinischen Gesellschaft zu Würzburg. (Also *Verh.*)  
*SB. nat. Fr.*—Sitzungsberichte der Gesellschaft naturforschender Freunde zu Berlin.  
*SB. niederrhein. Ges.*—Sitzungsberichte der niederrheinischen Gesellschaft für Natur- und Heilkunde (Bonn). (Published with *Verh. & CB. Ver. Rheinl.*)  
*SB. Soc. Erlangen*—Sitzungsberichte der physikalisch-medicinischen Societät zu Erlangen.

- SB. z.-b. Wien*—Sitzungsberichte der zoologisch-botanischen Gesellschaft in Wien (Vienna). (Also *Verh.*)
- Schr. Ges. Danz.*—Neueste Schriften der naturforschenden Gesellschaft zu Danzig.
- Schr. Ges. Königsb.*—Schriften der physikalisch-ökonomischen Gesellschaft zu Königsberg in Preussen.
- Schr. gesamt. Naturw. Marburg*—Schriften der Gesellschaft zur Beförderung der gesammten Naturwissenschaften zu Marburg.
- Schr. Nat. ges. Dorpat.*—Schriften herausgegeben von der Naturforscher-Gesellschaft bei der Universität Dorpat. (Also *SB.*)
- Schr. Nat. Ver. Schleswig*—Schriften des naturwissenschaftlichen Vereins für Schleswig-Holstein (Kiel).
- Schr. Ver. Harzes*—Schriften des naturwissenschaftlichen Vereins des Harzes in Wernigerode.
- Schr. Univ. Kiel*—Schriften der Universität zu Kiel.
- Science*—Science (Dall : Cambridge, Mass.).
- Sci. Goss.*—Hardwick's Science Gossip (Taylor : London).
- Sci. P. R. Dubl. Soc.*—Scientific Proceedings of the Royal Dublin Society.
- Sci. Tr. R. Dublin Soc.* (2)—The Scientific Transactions of the Royal Dublin Society. Second Series.
- Scot. Nat.*—The Scottish Naturalist (Clarke : Perth).
- Smiths. Contrib. Knowledge*—Smithsonian Contributions to Knowledge (Washington).
- Smiths. Misc. Coll.*—Smithsonian Miscellaneous Collections (Washington).
- Smiths. Report*—Annual Report of the Board of Regents of the Smithsonian Institution, &c. (Washington).
- Soc. Ent.*—Societas Entomologica.
- Soc. Agricole Pyrén.-orient.*—Société Agricole Scientifique et Littéraire des Pyrénées-orientales (Perpignan).
- Sprawozd. Kom. fizyogr.*—Sprawozdanie Komisji fizyograficznej, &c. (Cracow).
- Stavanger Mus.*—Stavanger Museums Aarsberetning.
- Stud. Biol. Lab. J. Hopkins Univ.*—Studies at the Biological Laboratory of the Johns Hopkins University (Baltimore).
- Stud. Mus. Dundee*—Studies from the Museum of Zoology in University College, Dundee (D'Arcy Thompson : Dundee).
- Sv. Ak. Handl.*—K. Svenska Vetenskaps-Akademiens Handlingar (Stockholm).
- Tag. Deut. Nat. Vers.*—Tageblatt der Versammlung deutscher Naturforscher und Aertzte.
- Tijdschr. Ent.*—Tijdschrift voor Entomologie (The Hague).
- Tijdschr. Ind. Volkenkund*—Tijdschrift voor Indische Taal-, Land- en Volkenkunde, etc. (Brandes & Abendann, Batavia and the Hague).

- Tijdschr. Nederl. Dierk. Ver.* (2)—Tijdschrift van de Nederlandsche Dierkundige Vereeniging (Leyden).
- Tijdschr. Nederl. Ind.*—Naturkundig Tijdschrift voor Nederlandsch Indië (Batavia).
- Timehri*—Timehri: being the Journal of the Royal Agricultural and Commercial Society of British Guiana (Quelch : Demerara).
- Termes Közlöny*—Természettudományi Közlöny kiadja a k. magyar termeszett. Társulat (Budapest).
- Term. füzetek*—Természettudományi füzetek : kiadja a magyar remzeti Múzeum (Journal of Zoology, &c., edited by Hungarian Museum at Budapest).
- Tr. Albany Inst.*—Transactions of the Albany Institute. (Formerly *Proceedings* also).
- Tr. Am. Phil. Soc.*—Transactions of the American Philosophical Society, &c. (Philadelphia). (Also *Proceedings*).
- Tr. Am. Ent. Soc.*—Transactions of the American Entomological Society (Philadelphia).
- Tr. A. S. Japan*—Transactions of the Asiatic Society of Japan (Yokohama).
- Tr. Camb. Phil. Soc.*—Transactions of the Cambridge Philosophical Society. (Also *Proceedings*.)
- Tr. City London Soc.*—Transactions of the City of London Entomological and Natural History Society (London).
- Tr. Conn. Ac.*—Transactions of the Connecticut Academy of Sciences (New Haven).
- Tr. Croydon Club.*—(See *Proceedings*.)
- Tr. Cumberl. Westmorl. Ass.*—Transactions of the Cumberland and Westmoreland Association for the Advancement of Literature and Science (Carlisle).
- Tr. Dumfries Nat. Hist. Soc.*—The Transactions and Journal of Proceedings of the Dumfries and Galloway Natural History and Antiquarian Society (Dumfries).
- Tr. Edin. Geol. Soc.*—Transactions of the Edinburgh Geological Society.
- Tr. Edinb. Nat. Soc.*—Transactions of the Edinburgh Field Naturalists' and Microscopical Society.
- Tr. Ess. Club* = *Ess. Nat.*—Essex Naturalist : being the Journal, Transactions, and Proceedings of the Essex Field Club (Buckhurst Hill).
- Tr. E. Kent Nat. Hist. Soc.*—Transactions of the East Kent Natural History Society (Canterbury).
- Tr. E. Soc.*—Transactions of the Entomological Society of London.
- Tr. Hertf. Soc.*—Transactions of the Hertfordshire Natural History Society and Field Club (Watford).
- Tr. Kansas Ac.*—Transactions of the Kansas Academy of Science (Topeka).

- Tr. Leicester Soc.*—Transactions of the Leicester Literary and Philosophical Society (Leicester).
- Tr. L. S.*—Transactions of the Linnean Society, London. (Also *Journal*.)
- Tr. L. S. New York*—Transactions of the Linnean Society of New York.
- Tr. Manch. Geol. Soc.*—Transactions of the Manchester Geological Society.
- Tr. Manch. Micr. Soc.*—Transactions of the Manchester Microscopical Society.
- Tr. Maryland Ac. Sci.*—Transactions of the Maryland Academy of Sciences.
- Tr. Norw. Soc.*—Transactions of the Norfolk and Norwich Naturalists' Society (Norwich).
- Tr. Notts. Soc.*—Transactions of the Nottingham Naturalists' Society.
- Tr. N. York Ac. Sci.*—Transactions of the New York Academy of Sciences (New York). (Also *Annals*.)
- Tr. N. Z. Inst.*—Transactions and Proceedings of the New Zealand Institute (Wellington).
- Tr. Odont. Soc.*—Transactions of the Odontological Society.
- Tr. Ottawa Nat. Club*—Transactions of the Ottawa Field-Naturalists' Club. (Also called *Ottawa Naturalist*.)
- Tr. & P. Perthsh. Soc.*—Transactions and Proceedings of the Perthshire Society of Natural Science (Perth).
- Tr. R. Irish Ac.*—Transactions of the Royal Irish Academy (Dublin).
- Tr. S. African Phil. Soc.*—Transactions of the South African Philosophical Society (Cape Town).
- Tr. R. Soc. Canada*—Proceedings and Transactions of the Royal Society of Canada (Montreal).
- Tr. R. Soc. Edinb.*—Transactions of the Royal Society of Edinburgh.
- Tr. R. Soc. S. Austr.*—Transactions of the Royal Society of South Australia (Adelaide).
- Tr. R. Soc. Vict.*—Transactions of the Royal Society of Victoria. (Also *Proceedings*.)
- Tr. Shropshire Soc.*—Transactions of the Shropshire Archæological and Natural History Society (Shrewsbury and Oswestry).
- Tr. Stirling Soc.*—Transactions of the Stirling Natural History and Archæological Society.
- Tr. St. Louis Acad.*—Transactions of the Academy of Science of St. Louis.
- Tr. Texas Ac.*—Transactions of the Texas Academy of Science.
- Tr. Wagner Inst.*—Transactions of the Wagner Free Institute of Science of Philadelphia.
- Tr. Wisconsin Acad.*—Transactions of the Wisconsin Academy of Sciences, Arts, and Letters (Madison). (Also *Bulletin*.)

- Tr. Woolhope Nat.*—Transactions of the Woolhope Naturalists' Field Club (Hereford).
- Tr. Yorksh. Union*—Transactions of the Yorkshire Naturalists' Union (London & Leeds).
- Tr. Z. S.*—Transactions of the Zoological Society (London).
- Trav. Inst. Zool. Lille*—Travaux de l'Institut Zoologique de Lille et de la Station maritime de Wimereux (Lille).
- Trav. Lab. Histol.*—Travaux du Laboratoire d'Histologie du Collège de France, École pratique des Hautes Études (Ranvier : Paris).
- Trav. Soc. Univ. Kharkow*—Travaux de la Société des Naturalistes à l'Université impériale de Kharkow.
- Trav. Soc. Varsovie*—Travaux de la Société des Naturalistes de Varsovie. Comptes rendus de la section biologique. (Also *Protokolui otdyeleniya biologhii* [Warsaw].)
- Trencsén term. egy.*—Trencsén mezzei természettudományi egyesület (Trencsin).
- Tromsø Mus. Aarsk.*—Tromsø Museum's Aarshefter.
- Trudui Kazan. Univ.*—Trudui obshchestva estestvoisputatelei pri Imperatorskom Kazanskom Universitetye.
- Trudui Kharkoff Univ.*—Trudui obshchestva isputatelei prihody pre imp. Kharkovskom Universitetye (Kharkoff).
- Trudui obsh. est.*—Trudui obshchestva estestvoisputatelei pri Imperatorskom Varshavskom Universitetye (Warsaw).
- Trudui Russ. Est.*—Trudui sotsialno-russkikh estestvoisputatelei.
- Trudui St. Petersburg Est.*—Trudui sanct Petersburgskagho obshchestva estestvoisputatelei. (Called also Travaux de la Société des Naturalistes de St. Petersburg.)
- Unters. Nat.*—Untersuchungen zur Naturlehre des Menschen und der Thiere (Moleschott : Giessen).
- Upsala Univ. Årsskrift*—Upsala Universitets Årsskrift (Upsala). (Also *Act. Upsala.*)
- Verh. Ak. Amst.*—Verhandelingen der koninklijke Akademie van Wetenschappen (Amsterdam). (Also *JB.*)
- Verh. Anat. Ges.*—Verhandlungen der anatomischen Gesellschaft (Jena : published with *Anat. Anz.*).
- Verh. anthrop. Ges.*—Verhandlungen der Berliner anthropologischen Gesellschaft (Berlin).
- Verh. deutsch. Naturf.*—Verhandlungen der Gesellschaft deutscher Naturforscher und Ärzte (Leipzig or elsewhere).
- Verh. deutsch. odont. Ges.*—Verhandlungen der deutschen odontologischen Gesellschaft.
- Verh. deutsch. Zool. Ges.*—Verhandlungen der deutschen zoologischen Gesellschaft.



*Verh. geol. Reichsanst.*—Verhandlungen der k.-k. geologischen Reichsanstalt (Vienna). (Also *JB.*)

*Verh. Ges. Basel*—Verhandlungen der naturforschenden Gesellschaft in Basel (Bâle).

*Verh. Ges. Würzb.*—Verhandlungen der physikalisch-medicinischen Gesellschaft zu Würzburg. (Also *SB.*)

*Verh. k. Leopold. Carol. Akad. Naturf.*—(See *N. Act. Ac. Leop. Carol. Nat. cur.*)

*Verh. naturw. Ver. Karlsruhe*—Verhandlungen des naturwissenschaftlichen Vereins in Karlsruhe.

*Verh. schweiz. Naturf. Ges.*—(See *Act. Soc. Helv.*)

*Verh. Siebenb. Ver.*—Verhandlungen und Mittheilungen des Siebenbürgischen Vereins für Naturwissenschaften (Hermannstadt).

*Verh. Ver. Brünn*—Verhandlungen des naturforschenden Vereins in Brünn.

*Verh. Ver. Hamb.*—Verhandlungen des Vereins für naturwissenschaftliche Unterhaltung zu Hamburg.

*Verh. Ver. Heidelb.*—Verhandlungen des naturhistorisch-medicinischen Vereins zu Heidelberg.

*Verh. Ver. Presburg*—Verhandlungen des Vereins für Natur- und Heilkunde zu Presburg.

*Verh. Ver. Rheinl.*—Verhandlungen des naturhistorischen Vereins der preussischen Rheinlande und Westphalen (Bonn). (Also *CB.*)

*Verh. z.-b. Wien*—Verhandlungen der kaiserlichen-königlichen zoologisch-botanischen Gesellschaft in Wien (Vienna). (Also *SB.*)

*Verh. d. Ver. Santiago*—Verhandlungen des Deutschen wissenschaftlichen Vereines zu Santiago (Santiago, Chili).

*Versl. Ak. Amst.*—Verslagen en Mededeelingen der k. Akademie van Wetenschappen (Amsterdam).

*Vict. Nat.*—Victorian Naturalist, The Journal and Magazine of the Field Naturalists' Club of Victoria (Melbourne).

*Vid. Medd.*—Videnskabelige Meddelelser fra den naturhistoriske Forening (Copenhagen).

*Viert. Ges. Zürich*—Vierteljahrschrift der naturforschenden Gesellschaft in Zürich (Wolf : Zürich).

*West Am. Scientist*—The West American Scientist (San Diego).

*Wien. ent. Z.*—Wiener entomologische Zeitung (Vienna).

*Wilt. Mag.*—The Wiltshire Archaeological and Natural History Magazine (Devizes).

*York. Phil. Soc.*—Yorkshire Philosophical Society Annual Report (York).

*Z. Biol.*—Zeitschrift für Biologie (München).

*Z. Ent. Bresl.*—Zeitschrift für Entomologie (Breslau).

- Z. Ferdinand. Tirol Vorarlberg*.—Zeitschrift des Ferdinandeums für Tirol und Vorarlberg (Innsbrück).
- Z. f. Ethnol.*.—Zeitschrift für Ethnologie (Bastian & Hartmann : Berlin).
- Z. f. Thiermed.*.—Zeitschrift für Thiermedizin und vergleichende Pathologie).
- Z. geol. Ges.*.—Zeitschrift der deutschen geologischen Gesellschaft (Berlin).
- Z. ges. Orn.*.—Zeitschrift für die gesammte Ornithologie (Von Madarász: Budapest).
- Z. Naturw.*.—Zeitschrift für Naturwissenschaften. Original Abhandlungen und Berichte herausgegeben im Auftrage der naturwissenschaftlichen Vereins für Sachsen und Thüringen (Brass : Halle-a-S.).
- Z. Orn.*.—Zeitschrift für Ornithologie und praktischen Geflüg.
- Z. wiss. Mikr.*.—Zeitschrift für wissenschaftliche Mikroskopie und für mikroskopische Technik (Berens : Braunschweig).
- Z. wiss. Zool.*.—Zeitschrift für wissenschaftliche Zoologie (Köl liker & Ehlers : Leipzig).
- Zapiski Kiev.*.—Zapiski Kievs kagho Obshchestva Estestvoispytatelei (Kieff).
- Zapiski Novoross. Obsch. Estestv.*.—Zapiski Novorossiskagho Obshchestva Estestvoispytatelei (Odessa).
- Zoe*.—Zoe : A Biological Journal (San Francisco).
- Zool.*.—The Zoologist (Harting : London).
- Zool. Anz.*.—Zoologischer Anzeiger (Oarus : Leipzig).
- Zool. Beitr.*.—Zoologische Beiträge (Breslau).
- Zool. Gart.*.—Der Zoologische Garten (Noll : Frankfurt).
- Zool. Jahrb.*.—Zoologische Jahrbücher (Spengel : Giessen).
- Zool. JB.*.—Zoologischer Jahresbericht (Mayer & Giesbrecht : Berlin).
- Zool. Mag.*.—The Zoological Magazine (Tokyo).
- Zool. Rec.*.—The Zoological Record (Zool. Soc. : London).
- Zool. Vort.*.—Zoologische Vorträge herausgegeben von William Marshall (Leipzig).

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An asterisk prefixed to a quotation signifies that the Recorder has not seen the journal or work referred to.

## ERRATA.

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INSECTA, p. 107, top line, for "*Pryacoderus*," read "*Pyracoderus*."

INSECTA, p. 139, line 11 from top, after "*Tactoderus*" add "n. g."

INSECTA, p. 139, line 12 from top, transfer "*Tænophthalmus costifer*" to p. 158, it being a Curculionid.

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# THE ZOOLOGICAL RECORD

## FOR 1892.

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BY

J. ARTHUR THOMSON, M.A.

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- C. Oogenesis, Spermatogenesis, Fertilisation.
- D. Sex, Reproduction, and Heredity.
- E. Evolution.

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537. —. Aufsätze über Vererbung und verwandte biologische Fragen. Jena : 8vo, vii & 848 pp., 19 figg.
538. —. Essays upon Heredity and Kindred Biological Problems. Vol. 2. Edited by E. B. Poulton & A. E. Shipley. London : 8vo, 226 pp.
539. WELDON, W. F. R. On certain Correlated Varieties in *Crangon vulgaris*. *P. R. Soc.* li, pp. 2-21.
540. WERNER, F. Untersuchungen über die Zeichnung der Wirbelthiere. *Zool. Jahrb. (Abth. Syst.)* vi, pp. 155-229, 5 pls.
541. —. Zoologische Miscellen. I. Konvergenz oder Verwandtschaft. II. Noch etwas über die Zeichnung der Tiere. III. Die epitrichial Skulptur der Schlangenepidermis. *Biol. Centralbl.* xii, pp. 268-280.
542. WILSON, E. B. On Multiple and Partial Development in *Amphioxus*. *Anat. Anz.* pp. 732-740, 11 figg.
543. WIEDERSHEIM, R. Das Gliedmassenskelet der Wirbelthiere mit besonderer Berücksichtigung des Schulter- und Beckengürtels bei Fischen, Amphibien, und Reptilien. Jena : text 8vo, v & 266 pp., 40 figg., atlas of 17 pls.
544. WILDEMAN, E. DE. Les recherches récentes sur la structure cellulaire et la division du noyau. *Neptunia*, ii, pp. 1400-1410 & 1411-1444.
545. —. Les recherches récentes sur la structure cellulaire. *Bull. Soc. Belg. Micr.* xviii, pp. 16-24.
546. WINKLER, F. Zur Frage nach dem Ursprung des Pigments. *MT. embr. Inst. Wien*, xii, pp. 64-80.
547. ° —. Zur Frage nach dem Ursprunge des Pigments. *Wien. Med. Wochenschr.* xlii, pp. 1153-1155, 1193-1196, 1230-1232, & 1260-1262.

548. WUNDT, W. Vorlesungen über die Menschen- und Thier-seele. 2 umgearb. Aufl. Hamburg and Leipzig : 8vo, xii & 495 pp.
549. WURM, W. Ueber die Farbe der Vogelfedern. JH. Ver. Württ. xlviii, pp. 41-46.
- WYLD, N. [See THOMSON & WYLD (489).]
550. YUNG, E. De l'influence des lumières colorées sur le développement des animaux. C.R. cxv, pp. 620 & 621.
551. —. Sur l'existence d'un soi-disant sens de direction ou d'orientation chez l'homme et les animaux. C.R. Soc. helv. lxxiv, pp. 49-51.
552. \* —. Orientierungssinn bei Menschen und Thieren. Nat. Rundschau, vii, pp. 195 & 196.
- [See also VOGT & YUNG (518).]
553. †ZACHARIAS, O. Katechismus des Darwinismus. Leipzig : 8vo, viii & 176 pp., 30 figg., 1 pl., 1 portrait.
554. ZANDER, R. Ueber den gegenwärtigen Stand der Lehre von der Zelltheilung. Biol. Centralbl. xii, pp. 281-309.
555. ZIEGLER, H. E. Ueber die embryonale Anlage des Blutes bei den Wirbeltieren. Verh. deuts. Z. Ges. ii, pp. 18-30.
556. —. Ueber den Begriff des Instincts. *Op. cit.* 1892, pp. 122-136.
557. ZIEGLER, J. Tierphänologische Beobachtungen zu Frankfurt am Main. Ber. Senck. Ges. 1892, pp. 47-69.
558. ZIMMERMANN, K. W. Pigmentzellen mit Attraktionsphären. Verh. Anat. Ges. vi (1892), pp. 274 & 275.
559. ZITTEL, K. A. VON. Handbuch der Paläontologie. 1 Abt. Paläozoologie, Bd. iv, Lief. 1, *Mammalia*. München and Leipzig : 8vo, 1-304 pp., 245 figg.
560. ZOJA, L. & R. Intorno al plastiduli fucsiniophili (bioplasti dell' Altmann). Mem. Ist. Lomb. vii, pp. 237-270, 2 pls.
561. \* —. Sur les plastidules fuchsinophiles. Bioplastes d'Altmann (conclusion). J. Microgr. xvi, pp. 13-15.
562. ZOPF, W. Beiträge zur Physiologie und Morphologie Niederer Organismen. 1 Heft. Leipzig : 8vo, iv & 97 pp., 3 pls.
563. †ZSCHOKKE, E. Weitere Untersuchungen über das Verhältnis der Knochenbildung zur Statik und Mechanik des Vertebraten-Skelettes. Zürich : 4to, 102 pp., 11 col. pls., illustrs.

*Re* Evolution.

## II.—SUBJECT-INDEX.

The object of this part of the RECORD is to bring together those contributions which have a direct bearing on the larger biological problems. Such of these papers as are based on special examples are also included in the Special Records; these latter, moreover, include many observations on variation, mimicry, habits, &c., that cannot be noticed in this General Record.

- A. Text-Books, Essays, and General, p. 36.
- B. Cell and Protoplasm, p. 42.
- C. Oogenesis, Spermatogenesis, Fertilisation, p. 44.
- D. Sex, Reproduction, and Heredity, p. 46.
- E. Evolution, p. 49.

## A. TEXT-BOOKS, ESSAYS, AND GENERAL.

## (1) TEXT-BOOKS, &amp;c.

Text-books: BONNIER (63), CAMPBELL (89), CARLET (90), ELLENBERGER (148), ENGEL (153), GIROD (204), GRIFFITHS (212), HERTWIG, O. (254), HERTWIG, R. (258), HURST (341), LABORDE (315), LAMEERE (316), LANG (318), MARSHALL (341), MINOT (355), PERRIER, E. (393), PERRIER, R. (392), RAWITZ (420), RETTERER (423), RITZEMA-BOS (327), ROULE (436), SCHOFIELD (456A), SUSSDORF (483), THOMSON (487), VOGT & YUNG (518), ZITTEL (559).

Other books of a general nature: BATES (32), BREHM (73), BRONN (75), DISTANT (125), HUDSON (271), HUTCHINSON (274), KIPLING (294), MOSELEY (367), NEUMANN (374), THOMSON (488).

## (2) NOMENCLATURE.

Orientation of the body: SCHULZE (460) proposes a complete series of unambiguous terms. All not quite irregular bodies may be grouped according as their middle is defined by a point, a line, or a plane,—synstigma, syngamma, sympeda. Around the centre is central or proximal, the direction leading towards this is centrad or proximad, the position is centran or proximan. So distal, distad, distan; axial, axiad, axian. The two ends of the principal axis are rostral and caudal. The two ends of the dorso-ventral axis are dorsal and ventral. The two ends of the perilateral (isopolar) axis are dextral and sinistral. Related terms end in *n* and in *d* as above. The median plane separates dextral and sinistral, the frontal plane separates ventral and dorsal, the transversal plane separates caudal and rostral.

The terms proximal and distal; FRORIEP (179).

Terms of auxology: BUCKMAN & BATHER (79) suggest the following terminology:—

ONTOGENY.		PHYLOGENY.	
Anaplasia .	{ Embryonic. Brepheic. Neanic.	Same terms, with prefix "phyl."	{ Epacme.  } Acme.  } Paracme.
Metaplasia .	{ Ephebic.		
Cataplasia .	{ Gerontic. Catabatic. Hypostrophe.		

Zoological nomenclature: BLANCHARD (58, 59), GIRARD (203), HERDMAN (250), TICHOMIROV (490).

### (8) TAXONOMIC.

KENNEL (293) sees seven classes or cycles of animals, viz.:—

- I. *Protozoa*.
- II. *Metazoa*.

1. *Radiata* . { *Spongiæ*.  
*Cœlentera*.  
*Echinoderma*.
  2. *Bilateralia* . { *Insegmentata*.  
*Segmentata*.
- or, a. *Animaux à gastrula* { *Insegmentata*.  
b. *Animaux à trochosphæra* { *Segmentata*.

CHOLODKOWSKY (95) gives the following arrangement:—

- Metazoa* . { *Enterocœla*: incl. *Brachiopoda*, *Echinoderma*, *Chaetognatha*, *Chordata*, *Enteropneusta*.  
*Genitocœla*: incl. all *Cœlomata* not *Enterocœla*, in which the cœlome is said to arise in the compact mass of mesoderm, which corresponds to the sexual tissue of *Platodes*.  
*Acœla*: incl. *Cœlentera*, *Porifera*, *Platodes*, *Nemertini*, *Orthonectida*, and *Dicyemida*.

Embryology and classification: TICHOMIROV (490).

Affinities of *Vertebrata*; ROULE (437).—Affinities between *Arthropoda* and *Vertebrata*; BORDAGE (64).—Affinities of *Vertebrata*; ROULE (437).

## (4) DISTRIBUTION.

AGASSIZ (2), APSTEIN (18, 19), BLES (69A), BRANDT (71), CLARKE (97), FIELD (165), FISCHER-SIGWART (166), IMHOF (277-282), KELLER (291), KRÜMMEL (312), MARENZELLER (338), MÖBIUS (357), SCHÜTT (461), SIMROTH (472), STOLL (478), WALLACE (524).

## (5) MORPHOLOGICAL.

General questions of theoretical morphology ; DRIESCH (130-132).—Suggested correction of the prevalent conception of homology ; BATESON (33).

Principles of skeleton-making in Rhizopoda, Sponges, and Echinoderms ; DREYER (128, 129).—Architecture of skeletal substances ; SOLGER (475).

Mesoderm and Metamerism ; PERENYI (391), RABL (410, 411).—Metamerism of *Enterocæla* due to ramifications of the gut ; of *Genitocæla* due to linear budding ; CHOŁODKOWSKY (95).—Metamerism of *Vertebrata* ; BURCKHARDT (85): of Vertebrate head ; HERRICK (252).—Primitive segmentation of the Vertebrate brain ; WATERS (532).—Spiral modification of metamerism ; MORGAN (364).

Relation of size of brain to size of body ; LATASTE (320).

Vertebrate nervous system : Brain, EDINGER, *Selachii*, *Amphibia* (141) ; KÖPPEN, Lizard (303) ; SCERVINI, General (449) ; RETZIUS, Cerebellum, sympathetic ganglia (424) ; BURCKHARDT, Phyletic history of the brain (85).—Cranial nerves ; FRORIEP (178), KUPFFER (314).—Parietal eye ; BERANECK (47).

Pituitary body ; SAINT-REMY (448).

Eye ; MATTHIESEN (343).

Vertebrate ear ; AYERS (25).

Epiglottis ; GEGENBAUER (193).

Pectoral and pelvic girdles, especially of Fishes, Amphibians, and Reptiles ; WIEDERSHEIM (543).

Urino-genital system ; SEMON (464).

Morphology of Cyclopiæ monsters ; EMERY (151).

## (6) PHYSIOLOGICAL.

Physiology of the *Invertebrata* ; GRIFFITHS (212).—Comparative physiology of domestic animals ; ELLENBERGER (148).—Chemical basis of animal body ; LEA (322).

Comparative pathology : "Tracing the significance of amœboid cells, or phagocytes, from the *Protozoa* upwards, through various groups of animals to the higher *Vertebrates*" ; METSCHNIKOFF (347).—Struggle for existence among the parts of the organism ; METSCHNIKOFF (348).

Theory of vital movement : In the expansion of a pseudopodium there must be local lessening of the surface tension ; this diminution of the surface tension depends on the chemical affinity of the protoplasm for oxygen ; the plasmic particles are drawn within the operative sphere of the oxygen molecules in the medium, and, being satisfied, remain indifferent, or are shoved aside by their successors. Contraction is an expression of increased surface tension ; this increase occurs when the complex plasmic particles break up on being stimulated ; the disrupted particles are drawn to the centre of the unit mass ; the reason of this is in the nuclear substance, for which the exhausted protoplasm now exhibits chemotropism. Application of these ideas to *Vorticella*, and to muscle ; VERWORN (507).

Origin of striped muscle ; EIMER (145), HAYCRAFT (237).

Muscle and nerve ; MCKENDRICK (332).

Movement of animals studied by photographs ; MAREY (339), PASSY (389).

General physiology of the cell ; HERTWIG (256).—Comparison of "microscopic foams" with protoplasm ; BÜTSCHLI (83).

Studies on growth ; CORNEVIN (104).

Life and death ; SABATIER (446).

Death ; MITCHELL (356).—La synthèse des êtres vivants ; SABATIER (447).

Residual life ; GAUTIER & LANDI (188-191).

Nervous system ; HORSLEY (268).

Digestion and absorption (*Artemia*, &c.) ; FRENZEL (175, 176).

Comparative physiology of respiration ; GAGE (182, 183).

Blood of the *Invertebrata* ; GRIFFITHS (213, 214).—Hæmocyanin ; FRÉDÉRICQ (173), CUÉNOT (114), HEIM (241).

Iron in the animal body ; SCHMUL (454), SCHNEIDER (456) [*cf.* SIMROTH, *Die Entstehung der Landthiere*, 1891].

Autotomy of shore-crab ; FRÉDÉRICQ (174).—Autotomy of Spiders and Pycnogonids ; GAUBERT (185, 186).

## (7) ANIMAL INTELLIGENCE AND INSTINCT.

AAS (1).—Limits of animal intelligence ; DIXON (127), MIVART (127), MORGAN (127, 362).—Relation of human and animal "Seele" ; BIEGELEBEN (52).—Mental evolution in man and animals ; BODINGTON (60).—Theory of sensation ; DUBOIS (134).—History of instinct of *Pompilidae* ; FERTON (162).—Societies of Termites ; GRASSI (208).—Numerous observations ; HUDSON, W. H. (271), and HUDSON, G. V. (272).—Estimate of animal intelligence ; JACQUART (284).—Parental care ; KRÄPELIN (309).—Analysis of instinct of *Ammophila* ; MARCHAL (337).—Intelligence and instinct ; NADAILLAC (370).—Development of intellect ; SCHNEIDER (455).—Psychology of societies of Ants ; WASMANN (528).



—International relations between *Lomechusa* and Ants; WASMANN (527).—Sense of direction; YUNG (551).—Conception of instinct; ZIEGLER (556).—Revised edition of lectures; WUNDT (548).

## (8) EMBRYOLOGICAL.

Introduction to study of embryology; ROULE (436).

Text-Books: HERTWIG (254), KORSCHOLT & HEIDER (306), MINOT (355).

Old and new conceptions of development; HERTWIG (257).—Das biologische Grundgesetz; ARNDT (21).—On a supposed law of Metazoan development: Alternation of generations seems to underlie Metazoan development. The birth of the Nemertine on the Pilidium, that of the Echinoderm on the Pluteus, may be rather normal than exceptional. A larval stage lurks in all cases, but it may be represented merely by a blastoderm upon a yolk-sac, or by less than that. But the larva never disappears, however much it may undergo degeneration. In Mammals, where it is thoroughly parasitic, it is most reduced; BEARD (37, 38). See also ASSHETON (37).

Theory of germinal layers; HOUSSAY (270):—

Ectoderm	{ Epiblast	
	{ Neuroblast	
Endoderm	{ Mesoblast	
	{ Protohypoblast	{ Parablast
		{ Deutohypoblast { Metablast
		{ Hypoblast

Theory of mesoderm and metamerism; CHOLODKOVSKY (95).

Theory of mesoderm; RABL (410).

Homology of germinal layers: gastrulation in *Vertebrata*; REPIACHOFF (422).

Development of optic nerve of Vertebrates: The optic stalk has no share in forming the nervous parts of the eye; the nerve-fibres grow inwards from the retina towards and into the brain; ASSHETON (23).

Histogenesis of nerve; BEARD (36), and HERRICK (253): *contra*, BEARD and DOHRN; KÖLLIKER (302).

Nerve-cells and nerve-fibres: All nerve-fibres are direct processes of nerve cells; they are not formed by the concrescence of rows of cells; KÖLLIKER (301).

Transient ganglion cells; BEARD (39).—Cerebro-spinal ganglia: at a certain stage in the development of Amniota all the nerve cells of the spinal ganglia are opposito-bipolar (a form permanent in fishes), but they become unipolar. The spinal ganglia of Vertebrates are the origins of the sensory part of all the spinal nerves. The ganglia of 5th, 9th,

and 10th cranial nerves are comparable to spinal ganglia ; GEHUCHTEN (195, 196).

Wirbel and Urwirbel ; EBNER (140).

Blood corpuscles ; STRICHT (480).—Report on state of knowledge as to the history of blood corpuscles ; OPPEL (384).—Origin of the blood in Vertebrates ; ZIEGLER (555).

Yolk-organ of Vertebrates ; VIRCHOW (513-515).

Physiological factors determining metamorphoses : "Theory of metamorphosis as due to asphyxia" ; BATAILLON (30).

Experimental embryology : General accounts of recent work ; ANDREWS (9), KORSCHOLT (305), ROUX (438).—Experiments on Frog ova : a loss of even one-sixth of the substance of the ovum produced only circumscribed local defects or disturbances. Puncturing one of the two first segmentation cells resulted in a typical half-morula, half-gastrula, half-embryo. Right and left half-embryos, and also anterior and posterior half-embryos were produced. By "post-generation" the half-embryo may form a whole by vitalising the injured half-egg, which has been lying passive, while the uninjured half has been developing ; but Roux has also succeeded in rearing an entire frog-embryo from half an egg, without any co-operation on the part of the other injured half ; ROUX (305).

Influence of electric current on ova, and their segmentation ; ROUX (306).

Experiments on ova of Echinoids : With increased temperature the ova of sea-urchins [*Sphaerechinus*] formed double blastulæ, gastrulæ, and even Plutei. The mode of segmentation is also modified. If one cell of the 4-celled stage be shaken off or destroyed, the remainder may form a normal Pluteus ; and an isolated cell may form a blastula, or even a Pluteus. Pressure modifies very considerably the course of segmentation, but yet after removal of the disturbing influence normal larvæ result ; DRIESCH (130).—The addition of various salts (of potassium, lithium, &c.) to sea-water delayed the formation of the larval skeleton, inhibited the characteristic Pluteus outgrowths, or resulted in the production of altogether abnormal larvæ. It seems that the influence on the developing ova is not directly chemical, but is due to the altered osmotic pressure of the sea-water ; HERBST (249).

Artificial stimulus resulting in the production of an egg-membrane : Unfertilised ova of sea-urchins placed in sea-water and shaken up with chloroform, benzol, toluol, &c., form a protective membrane similar to that which appears after the entrance of a spermatozoon. Even on fertilised ova, robbed of their normal membrane, a second membrane was formed in response to artificial stimulus ; HERBST (249).

Multiple and partial development of *Amphioxus* ova : From the cells of the 2-celled stage shaken apart, two embryos of half-size result ; similarly from the 4-celled stage four embryos of quarter-size were produced. Incomplete separation of the cells resulted in various forms of connected dwarf-embryos. A unit from the 8-celled stage does not, however, form an embryo. According to Wilson this inability is due to

qualitative limitations. The segmentation of isolated blastomere of the 2- or 4-celled stage agrees exactly with that of the entire ovum; WILSON (542).

Incubation during continuous rotation; DARESTE (118).—Influence of light on orientation of chick embryo; BLANC (57).—Influence of coloured light on development; YUNG (550).

*Urmund* and *Spina bifida*: Study of abnormalities which occur in the development of Frog ova, in consequence of over-ripeness and polyspermy. The segmentation may be strangely irregular, large parts of the yolk may remain undivided, and the formation of the gastrula may be so disturbed that the *Urmund* remains partially or wholly unclosed. Morphological interpretations of resulting abnormalities; HERTWIG (255).

The terms of auxology; BUCKMAN & BATHER (79).

## B. CELL AND PROTOPLASM.

General treatises and essays on the Cell: HERTWIG (256), CHATIN (93), HEIDENHAIN (239), SOLGER (474), FRANCKE (171).

Physiology of the Cell and Protoplasm: Theory of protoplasmic movements; VERWORN (507).—The power cells have of altering their specific gravity; VERWORN (509).—Chemical irritability of protoplasm; ROEMER (429).—Physiological elements of protoplasm; DETMER (123).—Cell physiology; LILIENFELD & MONTI (325).

Protoplasm: General considerations; BEALE (35).—Activities of protoplasm compared with the phenomena seen in observing fine foams; BÜTSCHLI (83). The author's general conclusion is that protoplasm has a frothy or foam-like structure, and that the physical conditions observable in the drops of emulsion do, *mutatis mutandis*, help us towards an understanding of the streaming movements and changes of shape in protoplasmic units. Cytoplasm and nucleoplasm have a foam-like structure, and consist of a honeycomb-like arrangement of lamellæ, with fluid or enchylema in the interspaces. The structure may be mimicked by means of fine emulsions or foams. Appearances of fibrillation, reticulation, nodal thickenings, &c., are readily produced artificially. In various conditions amoeboid streaming movements occur.

Structure of Cytoplasm: ALTMANN (6, 7), BÜTSCHLI (83), CRATO (108), DANNEHL (117), FAYOD (161), FLEMMING (168), GUIGNARD (217, 218), KROMAYER (311), PRENANT (405-408).

Nucleus: Nucleus and Protoplasm; HEIDENHAIN (239).—Physiological import of nucleus; VERWORN (508); only through its metabolism does it influence the life of the cell.

Structure and Functions of Nucleus; MANN (335). The nuclear chromatin segments are organs for the transformation of simple into more complex compounds. The nucleolus is a storehouse of elaborated material. The achromatin is the essential plasma. Two special seats of the achromatin substance are the archoplasma and the endo-nucleolar substance.—

Experiments on function of nucleus ; CLARK (90).—Structure of nucleus ; ALTMANN (7).—Structure of resting nucleus ; KRASSER (310).

Rabl's doctrine of the nuclear segments ; HARTOG (234).

Affinity of nucleus for iron-staining chromatin ; GILSON (201).

Nuclei in glands of Amphibian skin ; TORALBO (492).

Attractive spheres and centrosomata ; BÜRGER (82), BÜTSCHLI (84), FICK (163), HANSEMAN (233), HEIDENHAIN (238), LEBRUN (323), MOORE (360), NICOLAS (376), STRICHT (481), ZIMMERMANN (558).

Cell-division : Present state of knowledge ; ZANDER (554).—Rôle of archoplasm ; MOORE (360).—Indirect division, general account ; VIALLETON (510).—Direct division ; NICOLAS (377).—Division of nucleus and of cell in epithelial tumours ; BORREL (66).—Nuclear fragmentation followed by the division of the cell ; BUSCALIONI (86).—Amitotic cell-division ; FRENZEL (177).—Heterotypical nuclear division in origin of reproductive elements ; HÆCKER (226).—Nuclear division in formation of mesoderm and endoderm in *Cyclops* ; HÆCKER (227).—Asymmetrical mitosis ; HANSEMAN (232).—Amitosis in embryonal envelopes of Scorpion ; JOHNSON (289).—EISMOND (147).

The fate of the central spindle in Karyokinesis ; KOSTANECKI (307).

Nuclear division in giant cells ; KOSTANECKI (308).

Terminology, for Aster, Dyaster, &c., it seems desirable to substitute Astroid, Dyastroid, &c. ; FLEMMING (167).

Flemming's "intermediate body" in the seminal cells of *Scelopendra* and *Lithobius* ; PRENANT (404).—Origin of achromatic spindle ; PRENANT (408).

Primitive fibrils ; APÁTHY (14). The primitive fibrils of smooth muscle and of nerve have been hitherto overlooked ; the interfibrillar spaces have been seen, not the fibrils. Contractile substance and conducting substance are alike intracellular plasmic products, and consist of primitive fibrils and of intrafibrillar substance.—Origin of muscle fibres ; EIMER (145), HAYCRAFT (237).—Muscle and nerve ; ROHDE (430, 431).

Cell-membrane ; BUSCALIONI (87).—The basilar membrane ; CHATIN (94).

Continuity between cells ; OLIVIER (382).

Biology of *Protozoa* ; OSBORN (387).

Histology of nervous system ; RETZIUS (424), ROHDE (430, 431), VAS (503).

Chemical properties of reticular tissue ; SIEGFRIED (468).

Schlummerzellen und Gewebsbildung ; EBERTH (138), GRAWITZ (210), SCHMIDT (453).

Miscellaneous ; MELTZER (345).

## c. OOGENESIS, SPERMATOGENESIS, FERTILISATION.

General biological considerations ; WEISMANN (535), HENKING (245).

## (1) OOGENESIS, MATURATION, &amp;c.

Embryological classification of ova ; HENNEGUY (247).—Comparison of male and female reproductive cells ; PRENANT (403).—Heterotypical nuclear division in oogenesis and spermatogenesis ; HÆCKER (226).—Graafian follicle, history of ; SCHOTTLÄNDER (457).

Yolk-cells and yolk-segmentation ; VIRCHOW (515).—Nutritive importance of the yolk-sac ; ROBINSON (428).

Yolk-organ of Vertebrates ; VIRCHOW (513-515).—Binucleate ovum of rat ; BLANC (56).

Ovum of reptiles ; ARNOLD (32).—Oogenesis in *Seps chalcides* ; GIACOMINI (198), MINGAZZINI (354), TOPARO (491).

Maturation in ovum of Trout ; BLANC (54).—Ovary and ovum of *Gobius minutus* ; GUITEL (221).—Ova of Turbot ; HOLT (265).—Oogenesis, &c., in Teleosteans ; FUSARI (180).—Oogenesis in *Teleostei* : Ovarian ova of Dab, Hake, &c. ; in all ripening ovaries, ova for three consecutive spawning periods are present ; CALDERWOOD (88).—Abnormal karyomitosis in Trout ovum ; STRACHLEY (479).—Ovarian ovum of *Selachii* : Complex alterations of mass and form exhibited by the chromosomata. It can hardly be a "*Keimplasma*" which undergoes such alterations of mass ; it must be an involved somatic plasma. Proposed theory of mutual fertilisation, or amphimixis of chromosomata ; RÜCKERT (440, 442).

History of the germ-cells in *Insecta* : An important treatise on oogenesis, maturation, and fertilisation in *Insecta*. Discussion of egg-envelopes, the formation of polar bodies, the "thelyid" (an achromatic polar body), &c. The first and second divisions of the spermatocytes are comparable to the divisions which form polar bodies. Polyspermy common. The arrhenoid of the spermatozoon comparable to the thelyid. Comparison of the processes of fertilisation in *Insecta*, *Protozoa*, and *Angiosperms* ; HENKING (245).—Oogenesis in *Cyclops* and *Canthocamptus* ; HÆCKER (225).—History of ovum in *Branchipus grubii* ; BRAUER (72).

Early development of *Cirripedia*, maturation, fertilisation, &c. ; GROOM (216).—Oogenesis in *Diaptomus* ; ISCHIKAWA (283).—Centrosomata in ovum of *Ascaris megalocephala* ; LEBRUN (323).—Vitelline nucleus of ova of *Trematoda* ; MONTICELLI (358), and CRETY (109).—In *Echinoderms* ; CUÉNOT (113).

## (2) FERTILISATION.

Fertilisation of ova in *Echinoderms*, *Selachii*, *Reptilia* ; EBERTH (137) ; in *Reptiles* ; OPPEL (383) ; in *Axolotl* ; FICK (164). The middle portion of the spermatozoon gives rise to an attractive sphere, which seems to divide ; FICK (164).

Immature ova of *Triton teniatus*; BORN (65): Trout; BÖHM (61). Trout: In fertilisation, the two pronuclei fuse, and so do their solar centres; BLANC (54, 55).

Invertebrates; PICTET (396).—Insects; HENKING (245).—*Diaptomus*: The primary sperm-cells and the primitive ova have eight chromatin elements; the pronuclei have four; there is a reducing division; in the first two segmentation-spheres there are likewise eight chromosomes; ISCHIKAWA (283).

Parthenogenesis (?) in Frog: of about 1500 unfertilised ova (of *Rana fusca*) about 100 exhibited irregular segmentation furrows; DEHNER (122).

General problems of fertilisation; HERTWIG (259), LWOFF (329), MÜLLER (369), WAGNER (522), WEBBER (533).

Comparison of the process of fertilisation in plants and in animals; GUIGNARD (219).

The protective membrane formed after fertilisation; HERBST (249) [see Embryology].

Polyspermy: In *Selachii*: Most, if not all, of the merocyte nuclei (vitelline or parablast nuclei) in the ova of the Selachians are modified male pronuclei; polyspermy appears to be normal; RÜCKERT (441).—In Reptiles: Accessory sperm-nuclei in *Anguis*, *Tropidonotus*, *Lacerta*; polyspermy appears to be frequent; OPPEL (383).—In Axolotl: Sometimes as many as nine spermatozoa in ovum; FICK (164).—In Insects; HENKING (245).

Results of over-fertilisation: In the over-fertilised ovum opposing factors conflict; on the one hand there are forces tending to development and incited by the fertilisation, on the other hand there are forces of an inhibiting and disturbing nature, due to the injury the ovum has sustained by over maturation, or by other abnormal conditions operative before fertilisation; HERTWIG (255) [see also Embryology].

### (3) SPERMATOGENESIS.

General significance of spermatogenesis; WATASE (530).—Comparison of spermatogenesis and oogenesis; HENKING (245).—Morphological comparison of ovary and testis; PRENANT (403).—Heterotypical nuclear division in oogenesis and spermatogenesis; HECKER (226).—Especially details in regard to reduction-divisions in *Gryllotalpa vulgaris*; RATH (419).

Histology of testis; GERMANO (197).—Distinction between spermatogenesis and testicular secretion; VARIOT & BEZANÇON (500–502).—Histology of spermatozoon; BALLOWITZ (27).

Spermatogenesis: in various *Invertebrates*; PICTET (396): in *Trematoda*; MONTICELLI (359): in *Echinoderms*; CUÉNOT (113): in *Diaptomus*; ISCHIKAWA (283): in *Scolopendra*, *Lithobius*; PRENANT

(403-408): in Frog; BERTACCHINI (50): in Salamander; NICOLAS (376): in *Sauropsida*; BENDA (45): in Mammals and Man; BARDELEBEN (29), VIALLETON (511).

Origin of Sertoli's cells; WATASE (529).

Spermine, &c.; BROWN-SEQUARD (77), DUCLAUX (135), HÉRICOURT (251), PEHL (398, 399).

## D. SEX, REPRODUCTION, HEREDITY.

### (1) SEX AND REPRODUCTION.

General considerations; WEISMANN (535), HENKING (245).—Summary of recent observations and theories; WEBBER (533).—Reproduction among plants and animals; NEVIANI (375).—Life and death; SABATIER (446).—Origin of contrast between somatic and reproductive cells in *Ascaris*; BOVERI (68).

Evolution of sex: The male organism inclines to greater activity, the female to greater passivity, a conclusion similar to that maintained by Geddes and Thomson in "The Evolution of Sex;" FRANCKEN (172).

Sex-differentiation: Important to distinguish (*a*) the phenomena of heredity, or the mixture of the parental characteristics in the offspring; and (*b*) the phenomena of sexual differentiation in the organism, in which the parental characters have already been mixed. The micro-chemical reaction of the sperm-nucleus, which is entirely different from that of the ovum-nucleus during the earlier stages of its existence, becomes essentially like that of the female pronucleus at the moment of fecundation. The phenomenon of sex-differentiation is one with that of irritability, and is the most pronounced of all the phenomena of protoplasmic irritability, because the stimulus acts at an early stage of ontogeny, and thus at the outset profoundly deflects the course of behaviour of the whole organism; WATASE (531).

Nature of sex: Critical review of some recent theories in regard to sex and reproduction. In contrasting the sexes, their reproductive elements, &c., the contrast must be expressed in contrasted *ratios* of anabolism (A) and Katabolism (K). Thus, in the female the ratio  $\frac{A}{K}$  is greater than the corresponding vital ratio in the male. This is designed as a correction of the general thesis of the "Evolution of Sex;" THOMSON & WYLD (489).

Origin of sex: Conditions unfavourable to ready assimilation are believed to tend to produce male offspring, reverse for female. In conjugation the starving cell is fed on surplus nourishment of the over-fed cell; MANN (336).

Parthenogenesis: History of our knowledge; TASCHENBERG (484).—Apparent parthenogenesis in ova of Frog; DEHNER (122).

Dissogonie : a new form of sexual reproduction ; CHUN (96).

Fertilisation and conjugation ; HERTWIG (259).

"Gamophagie:" According to the author, one germinal substance assimilates the other in fertilisation ; MÜLLER (369).—Fission and gemmation : WAGNER (521).

Hermaphroditism : Traces of hermaphroditism in the Lamprey, not without interest in reference to speculations as to the possible hermaphroditism of ancestral Vertebrates ; BEARD (40).—Hermaphroditism of *Astacus* ; La VALETTE, St. GEORGE (321).—Certain spermatogonia, "untrue to their original destination," may, instead of dividing into spermatocytes, grow into ova.—Lateral hermaphroditism ; TETENS (486).

Hybridism ; ELIOT (150).—Hybrid birds in nature ; SUCHETET (482).—Fertile sexual union can take place only between those insects whose genital appendages precisely correspond. Hybridism between different species seems mechanically impossible ; ESCHERICH (156).

Variability and hybridism of *Cyprinoids* ; HEINCKE (243).

Breeding in and in ; SCHILLER-TIETZ (451).

Biological conclusions illustrated in reference to certain *Hymenoptera*, *Diptera*, and *Coleoptera* ; VERHOEFF (506).—Sex and reproduction in *Hymenoptera*. (1) Proterothesia : in nests of *Fossorini*, *Vesparini*, and their parasites, the tenants of the anterior cells are male of the posterior female. (2) Proterocracy : the individuals which appear first in a brood are the strongest. (3) Proterandry, correlated with Proterothesia. (4) Polyandry ; VERHOEFF (504, 505).—Dichogamy in *Lepidoptera*. The advantage of dichogamy, or "dichogenesis," lies in the prevention of in-breeding ; its occurrence may be readily accounted for by natural selection ; PETERSEN (394).

Peculiarities of reproduction ; SEITZ (463).

Fecundation in tailed Batrachians ; BOULENGER (67).—Detailed study of reproduction in *Gobius minutus* ; GUITEL (222).—Variations in genital organs of *Gamasinae*, and mode of coition ; MICHAEL (350).

Determination of sex by nutrition ; LANDOIS (317).

Double-broodedness of *Lepidoptera* : whether influenced by the state of the food-plant ; MERRIFIELD (346).

Parental care among animals ; KRÄPELIN (309).

Conclusions as to the societies of Termites ; GRASSI (298).

Regeneration : Regeneration of the tail in *Lumbriculus* ; general considerations as to regenerative processes ; RANDOLPH (413).—Regeneration in Annelids : Bifurcated Annelids. Collection of cases. Some general considerations. "The bifurcated monstrosities exhibit what may be a universally present but latent ability of parts of a highly-organized animal to form a complete individual like that to which they belong ;" ANDREWS (11).

Regeneration ; WEISMANN (535).—Periodic regeneration of the upper half of the body in *Diplosomidae* ; OKA (381).—Post-generation ; ROUX (438).

Influence of nutrition on sex ; LANDOIS (317).—Influence of nutrition



on reproduction: It seems likely that the nutritive supply has much to do with Proterothesia and Proterocracy in *Hymenoptera*; VERHOEFF (504-506).

## (2) HEREDITY.

Historical and critical survey; sums up in favour of Lamarckian conceptions; OSBORN (335, 336).—Nature of heredity; HURST (273).

Das Keimplasma: This statement of Weismann's theory of heredity centres around his conception of the germ-plasm. This nuclear substance is believed to contain reserve vital units, or biophors, which are combined into units of a higher order—the determinants. Each determinant is capable of controlling one kind of cell, and the germ-cell contains as many determinants as there are different cells, or groups of cells, in the fully-formed organism, which are capable of being individually determined from the germ onwards. The determinants have a definite arrangement in the germ-plasm, forming aggregates of a higher order—the *ids*. It is suggested that parts of the chromosomes are the *ids*, and that the nuclear rods are aggregates of *ids*, spoken of as *idants*. Apart from the elaborate working out of the conception of a germ-plasm, there are important discussions of regeneration, multiplication by fission and gemination, alternation of generations, the formation of the germ-cells, amphimixis, reversion, dimorphism, and polymorphism, the non-transmission of acquired characters, variation, &c.; WEISMANN (535).

Translation of Weismann's essays; POULTON & SHIPLEY (538).—Weismann's "Idant" theory of heredity; HARTOG (234).

Transmission or non-transmission of acquired characters; ELLIOT (149), KNAUTHE (295), MILES (351), LATH (418), RILEY (426).

Answer to Weismann; BROWN-SÉQUARD (78A).

Pathology, so far from offering any support to the hypothesis of the transmission of acquired characters, pronounces against it; TYLDEN (494).

It is assumed, on insufficient evidence, that the nucleus is the sole bearer of hereditary qualities. The cell-plasma, and especially the centrosomata, must be taken account of; BERGH (48).

In reference to the Hoazin, GADOW (181) states that the crop, by its downward growth, gradually encroaches upon, and modifies, the conformation of neighbouring organs; some of these modifications of the sternal apparatus are already pre-formed to a considerable extent, before they are actually necessitated. They are inherited.

Transmission of acquired characters in *Pleuronectide*; GIARD (200).

HENKING (245) does not depreciate the importance of the nucleus as a bearer of hereditary qualities, but he also believes in the importance of the plasma, and in the modifiability of the chromosomata by influences from the protoplasm.

What is an "acquired character"? "Acquired characters, however evident they may be to all but the neo-Darwinians, have the convenient

property of becoming blastogenic, or not acquired, whenever they are proved to be transmitted"; NUTTING (380).

Inheritance of albinism; STAATS VON WACQUANT-GEOZZELLES (520).

Heredity; GRABHAM (206), MÜLLER (369).

## E. EVOLUTION.

### GENERAL QUESTIONS.

Das Keimplasma; WEISMANN (535) [*cf.* Heredity, *suprà*].

Darwin and after Darwin; ROMANES (433); German translation (434).

Catechism of Darwinism; ZACHARIAS (553).

Critical account of modern theories; HAMANN (231).

French predecessors of Darwin: historical and critical; QUATREFAGES (409).

Darwin and Darwinism; MORSELLI, CANESTRINI, CATTANEO, & LORIA (366).

Present state of the Evolution problem; some arguments for Lamarckian position; OSBORN (385, 386).

Criticism of Darwinian theory from philosophical standpoint; CREUTZBURG (111).

Controverted questions *re* Evolution, &c.; HUXLEY (275).

Experimental evolution; VARIGNY (498).

Origin of species; EIMER (146).

Elementary description of universal evolution; RAIMOND COULON (107).

On Delbosuf's laws; SOREL (476).

Dynamical theory of organisms; HAUPTMANN (236).

Protest against a materialistic conception of the organism; ARDISONE (20).

Transformation and descent; VIRCHOW (516).

Convergence or relationship? WERNER (541).

Das biologische Grundgesetz; ARNDT (21).

Urzeugung; SCHAAFFHAUSEN (450).

Theories of nutrition and heredity, in which energy is not recognised as one of the prime factors in every vital process, should be received with caution; MILES (351).

The importance of recognising the principle of the conservation of energy when considering the evolution of organisms [*cf.* Herbert Spencer's "Principles of Biology"]; RYDER (444).

General works: see also COULON (107), DUTOIT-HALLER (136), FARGES (160), MOTTO (368), TSCHEMEN (493).

## NATURE AND ORIGIN OF VARIATIONS.

Classification of animal variations; BRANDT (70):—

- |                |   |   |
|----------------|---|---|
| I. Spontaneous | { | <ul style="list-style-type: none"> <li>a. Strictly individual.</li> <li>b. Proper to the vital cycle.</li> <li>c. Proper to sex.</li> <li>d. Proper to future generations.</li> </ul>               |
| II. Acquired   | { | <ul style="list-style-type: none"> <li>a. Due to external influences.</li> <li>b. Due to function.</li> <li>c. Due to pathological processes.</li> <li>d. Correlated with the preceding.</li> </ul> |

Variations may be inherited (a) directly from parents, (b) indirectly by influence, (c) by atavism from ancestors.

Definite versus Fortuitous Variation: Discussion; MEEHAN (344), McMURRICH (333), ALLEN (5), COPE (101).

Fortuitous variation; RILEY (425).

On the "constitution" of Molluscs; SIMROTH (470).—Constitutional variation of markings in insects; ESCHERICH (156).—Correlated variations in *Crangon vulgaris*; WELDON (539).

Struggle for existence among the parts of an organism; METSCHNIKOFF (348).

Translation of essays on Amphimixis, &c.; WEISMANN (538).

Factors in evolution of Mammals; MORGAN (363).

Précis of teratology—human and animal; GUINARD (220).—Probable teratogenic origin of two species of *Tricladidae* (*Dendrocoelum nausicae* and *Phagocata gracilis*); HALLEZ (229).—Teratological variations: The malformations which occur in Frog embryos in consequence of the imperfect closure of the "Urmund" are analogous to the Terata mesodidyma and Katadidyma in Teleostean fishes, and to Spina bifida in higher Vertebrates; HERTWIG (255).

Variation in internal structures of *Gamasinae*; MICHAEL (350).

Variability and Hybridism of Cyprinoids; HEINCKE (243).

## INFLUENCE OF ENVIRONMENT.

Results of experimental Evolution; VARIGNY (498).

Specific variation in Arthropods: A certain kind of variation occurs with peculiar frequency in certain groups, thus sexual dimorphism in Copepods, protective adaptation in *Decapoda*. The habit of masking; HAECKER (228).

Influence of artificial environmental conditions on ova; DRIESCH (130), HERBST (249), DARESTE (119) and others [see Embryology].

Influence of surroundings on variation; LOCARD (326).

Colour-relation between Lepidopterous larvæ, pupæ, cocoons, and imagines, and their surroundings; POULTON (402).—Influence of surroundings on colour; BEDDARD (41).—Influence of coloured light on

development : Green Planarians and *Hydræ* do not grow better with violet than green light, are exceptions to the rule that green light is prejudicial to development. The *Hydra* grows more quickly in red than white light ; YUNG (550).—Influence of light on orientation of chick embryo ; BLANC (57).

Atrophy, &c., of eyes in cave-inhabiting animals ; JOSEPH (290).

Heliotropic animals ; ANDREWS (10), after LOEB.—Heliotropic *Nauplii* ; VIGUIER (512).

Influence of light on metabolism : Exclusion of light is associated with increase of weight, more fat, less hæmoglobin, &c. ; GRAFFENBERGER (207), EWALD (156A).

Influence of electrical stimulus on ova ; ROUX (439).—Influence of electrical stimulus on leucocytes ; DINEUR (124).—Galvanic stimulation of aquatic animals ; NAGEL (371, 372).

Relations between temperature and protoplasmic movement ; CLARK (98).—Influence of refrigeration and desiccation ; KOCHS (297).

Influence of fresh water on marine animals ; GOGORZA Y GONZÁLES (205).

Influence of cocain on *Cœlenterates*, worms, arthropods, &c. ; DANILEWSKY (116).

General discussion of parasitism ; LOOSS (327).

Functional adaptation ; MINERVINI (353) and ENDRES (152).

On the mechanical origiu of fish scales : The scales have a segmental arrangement ; their imbrication is explained by reference to the musculature which, in contraction, throws the integument into rhombic areolæ ; RYDER (443).

Evolution of skeletal structures : "An essay towards a mechanical explanation of organic structures." The occurrence of the tetraxial type of skeletal element in Sponges, Echinoderms, and Polycistina, in different materials, suggests independence of vital forces. Vesicular bodies tend to exhibit a tetraxial skeletal structure quite apart from metabolism, for merely physical reasons ; DREYER (128).

Relation of ossification to the statics and mechanics of the skeleton ; ZSCHOKKE (563).

Pœcilogony : when members of the same species have a different ontogeny ; GIARD (199). Cf. BROOKS & HERRICK (76).

On the relation between the shapes of fishes and the strength of the currents in which they live ; SCHIRSCHOFF (452).

The surface film of water, its relation to the life of plants and animals ; MIALL (349).

Effect of sudden pressure ; PHILIPPON (395).

Geotropism of lower organisms ; JENSEN (286).

Experiments on metamorphosis of Amphibians ; BATAILLON (31).

#### SELECTION AND ELIMINATION.

Struggle for existence : Geometrical representation of relative intensity of the conflict between organisms. For organisms swimming in water

or flying in air, we may say that their accessibility, *inter se*, and liability to attack is from 60,000 directions; for sessile organisms, or those lying on a plane, from 30,000 directions; for heavy terrestrial forms, from 400 directions; for burrowing or tubicolous, from 314 to 0; for testaceous, operculate, mimetic, or parasitic forms, accessibility almost or quite nil; RYDER (445).

Interspecific competition: *Myrmica ruginodis* making war on its own species; BIGNELL (53).

Extermination of animals; SCHULZ (459), VARIGNY (499). [*Cf.* LUCAS, F. A. Animals recently extinct, or threatened with extinction, as represented in the collections of the U. S. National Museum. Washington: 8vo, 1891, 40 pp., 11 pls.]

Natural selection among mankind; AMMON (8): in *Lepidoptera*; COMSTOCK (100).

Struggle between males: Not only is there a struggle between males, but the large number of males allows a selection of the fittest amongst the fit, and the strongest are first in the field (proterocracy); VERHOEFF (505).

Sexual selection; WALLACE (525).

Case of *Gelasimus annulipes*: The brightly-coloured chela of the male is (1) a club in contests with rival males, and (2) a signal to allure the females, and may be also a stopper for the burrow and a nuptial support; ALCOCK (4).

## PARTICULAR PROBLEMS.

### (a) COLOURATION.

Ætiology of animal colouration; BEDDARD (41).—Physiology of colour-change; BIEDERMANN (51).—Colour-changes in Fishes; SEMPER (465).

Physiological chemistry of colouration; URECH (496).—Analysis of green pigment in wings of *Lepidoptera*: Regarded as probably excretory; derived from uric acid; GRIFFITHS (215).—Rôle of pigments in histolysis and histogenesis; KUNCKEL D'HERCULAI (313).

The origin of pigment: Pigment is present in the ova of *Bufo* almost from the first, and seems to arise from a modification of yolk-plates; WINKLER (546).—Melanic pigment; POUCHET (401).—Melanism and melanochroism in British *Lepidoptera*; TUTT (495).

Albinism: APLIN (17), FABANI (157), MACPHERSON (334), WAITE (523), WEIR (534).

Colouration in birds; WURM (549): in birds' eggs; KOENIG-WARTHAUSEN, FRHR. (299), and RASPAIL (416, 417).

Origin and migration of pigment in Amphibia; EHLMANN (143, 144).

Melanism in Fishes; KNAUTH (296).

Colours of insects: COSTE (105, 106), GRIFFITHS (215), HOPKINS (266),

MELDOLA (266), URECH (496, 497), and others [see INSECTA].—Evolution of colours in the *Vanessa*; SMITH (473).

Pigments of ova of *Crustacea*; HEIM (242).

Iridescent colours; HODGKINSON (263).

Protective colouring; JOHNS (288).—Markings of Vertebrates; WERNER (540).

Hints from pathology: CASPARY, EHLMANN, JARISCH, KAPOSÍ—Die Pathogenese der Pigmentierungen und Entfärbungen der Haut: Verh. 10 Internat. Med. Congress Berlin (1890); Abth. Dermatol. 1892, pp. 91-114.

#### (b) MIMICRY.

General discussion of mimicry; special study of *Papilionidæ*; HAASE (223).

Recent observations, with criticism; BEDDARD (42).

Mimicry and other adaptations; BRANDES (69).

Alleged "aggressive mimicry" of *Volucellæ*; BATESON (34).

Aggressive mimicry of *Volucellæ*; corrections on latter author's book on "Colours of Animals"; POULTON (34).—A notable case: *Peridexia* (*Coleoptera*) and *Pogonius* (*Hymenoptera*); HELLER (244).—Mimicry in small insects; KENNEL (292).—Mimicry in Spiders; BANKS (28).—Mimicry; FABANI (159).

Protective resemblance in the animal kingdom; PLATEAU (397).

#### (c) MISCELLANEOUS.

Evolution of Flat-fishes; CUNNINGHAM (115) and GIARD (200).

Origin of muscle: The cross-striation is the expression of alternately strong and weak waves in the muscle substance. It is incomplete in sluggish animals, and more marked as activity increases. The striation is, in short, the result of increased function—the mechanical result of contraction; EIMER (145).

The origin of lungs: Air-breathing in fishes supposed to have been originally performed by the unchanged walls of the œsophagus; then a pouch, . . . an air-bladder, . . . a lung. [But how?]; MORRIS (365).

Origin of *Metazoa*: Discussion of *Salinella*; the higher organisation of the multicellular individual is to be regarded as the consequence of the gradual degeneration of the separate cell-individuals which compose it; APATHY (15).

Adaptations facilitating "masking" in Crabs; AURIVILLIUS (24), and HECKER (228).

Migration of birds; DIXON (126).—Speech of Monkeys; GARNER (184).

Segmentation: Occurrence of intercalated segments perhaps due to very favourable developmental conditions, to rapid growth causing "slips" in segmentation. Perhaps such cases help to bridge the gulf between Nemerteans and Annelids; CORI (103).

Rudimentary organs; KOCKS (298).—Study of rudimentary eyes in *Vertebrata*; KOHL (304).—Flughaut Bildung; MARSHALL (342).

Genital appendages of Insects: The intricacies of the genital appendages are not readily interpreted as adaptive. Their final cause is das Princip der Reinerhaltung der Arten; Their efficient cause ein unbekanntes Kraft; ESCHERICH (155).

Venation of wings in *Lepidoptera*; SPULER (477).

Parallel series in life-histories of *Pemphigiidae*; HORVATH (269).

Asymmetry of Gastropods; BUCHNER (80), LANG (319).

Parallelism of evolution in Old and New World; GAUDRY (187).

Stages of growth and decline [in development of *Brachiopoda*]; BEECHER (43).

Evolution of ant-societies; WASMANN (528).

Man's past and future considered according to the doctrine of evolution; BÜCHNER (81).

## II. MAMMALIA.

BY

R. LYDEKKER, B.A., F.G.S.

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A FEATURE of the year is the large amount of work which has been devoted to the elucidation of the morphology of the dentition, BALLOWITZ, BATESON, FREUND, KÜKENTHAL, LECHE, OSBORN, RÖSE, SCOTT, SCHLOSSER, THOMAS, and TOPINARD having all contributed memoirs on this subject. The view that Mammals were originally diphyodont is gaining universal acceptance. Attention may be drawn to SCOTT'S investigations as to the homology of the cusps of the premolars, which, if confirmed, show a remarkable difference between those teeth and the molars. Another subject which has received especial attention is that of the brain, and its relations in the higher and lower Mammals; SYMINGTON having reverted to the old view that the brain of the non-Placentals has no corpus-callosum. BEDDARD, BEEVOR, CHAPMAN, HILL, and TURNER have also contributed to this branch.

In distribution, HART MERRIAM'S important memoir on the life-zones of North America is likely to become classical.

Important advances have been made in our knowledge of the Mammals of Africa, several interesting new Antelopes having been described during the year—notably those respectively named by SCLATER and THOMAS. The latter's revision of the genus *Cephalophus* has cleared up the synonymy of a very difficult group; while TRUE'S memoir on the Mammals of East Africa is an important addition to our knowledge of the zoology of that region. The revision of the *Hyracoidea*, by THOMAS, is likewise of great value. The same writer has also contributed papers on the Mammals of the East, recording a new species of *Hemigale*, as well as several of *Tupaia* and *Sciurus*. The large number of new species of Monkeys described is also a feature of the year's work; while the observations of THOMAS on the dentition of *Centetes* claim special notice. Of high value are WINGE'S memoir on the Bats of Lagoa Santa, and CAMERON'S observations as to the relations of the antlers of the American Deer to those of the Old World.



Among palæontological work, reference may be made to EARLE's memoirs on *Coryphodon* and *Palæosyops*, and also to the remarkable horned Artiodactyle—*Protoceras*, now fully described by OSBORN and WORTMAN. In faunistic palæontology, BOULE and GAUDRY, as well as DÉPÉRET, have written on the Mammals of France; RÜTIMEYER has continued his researches on those of Switzerland, and HOFMANN on those of Styria; while COPE, OSBORN, and SCOTT have devoted themselves to the North American forms. The first part of the Mammalian portion of ZITTEL's Palæontologie indicates that when complete the work will be of the highest value to students of both fossil and recent Mammals.

### I.—THE GENERAL SUBJECT.\*

ABBOTT, W. J. L. [See p. 30, *Pinnipedia*.]

ALLEN, H. On the Foramen Magnum of the Common Porpoise, and on a Human Lower Jaw of unusual size. P. Ac. Philad. 1892, p. 289.

In two specimens of the skull of the Porpoise the basioccipital was seen to be entirely excluded from the condyles by the junction of the exoccipitals below the foramen magnum.

——. [See also *Chiroptera*, p. 25, and *Carnivora*, p. 28.]

ALLEN, J. A. On a small Collection of Mammals from the Galapagos Islands, collected by Dr. G. Baur. Bull. Am. Mus. Nat. Hist. iv, pp. 47–50.

Includes a new *Atalapha*, a new *Oryzomys*, and the common and black Rata. [See *Vespertilionidæ* and *Muridæ*.]

——. The Geographical Distribution of North American Mammals. T. c. pp. 199–243.

Adopts zone-divisions considerably differing from those taken by Merriam in the memoir cited on p. 11; giving the characteristic fauna of each.

AMEGHINO, F. Répliques aux Critiques du Dr. Burmeister sur quelques Genres de Mammifères Fossiles de la République Argentina. Bol. Ac. Arg. xii, pp. 437–469.

A reply to the criticisms of Burmeister quoted in Zool. Rec. xxviii, *Mamm.* pp. 5 & 6, in which the author maintains the correctness of his own views. The distinctness of the genera *Acrotherium*, *Adinotherium*, and *Notiohippus*, from *Nesodon*, is insisted upon, and it is urged that the critic has confounded milk with permanent teeth, and that his restoration of the skull of the latter is quite incorrect. The substitution of *Pachyn-*

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\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

*odon* in place of *Trigodon*, &c., is shown to be quite unjustifiable. That the early Megatherioids had a thin layer of enamel between the cement and dentine of their teeth, is held to be fully proved; and it is mentioned that this feature harmonizes with the rudiments of an enamel-organ recently discovered among living Edentates. It is further stated that the alleged existence of a plastron among the Glyptodonts is incorrect, that which has been mistaken for such being in reality the head-shield. It is also pointed out that Burmeister has made certain errors in regard to the proper tails belonging to the various genera of this group. Finally, the author mentions that his own name, *Pontoplanodes* (Zool. Rec. xxviii, *Mamm.* p. 48), has priority over his critic's *Saurodelphis* (*loc. cit.*).

ANDERSON, J. On a small Collection of Mammals, Reptiles, and Batrachians from Barbary. *P. Z. S.* 1892, pp. 3-24.

11 species of Mammals are mentioned, among which *Plecotus auritus* is, for the first time, recorded from Tunisia, while its alleged occurrence in Algeria is authenticated.

——. [See also p. 35, *Spalacidae*.]

BALLOWITZ, E. [See p. 51, *Edentata*.]

BATESON, W. On Numerical Variation in Teeth, with a discussion of the Conception of Homology. *P. Z. S.* 1892, pp. 102-115, figs.

Numerous instances are given of individual variation in the number of teeth of Mammals; especial interest attaching to a skull of *Ommatophoca*, in which an incipient division of the first premolar on one side of the upper jaw is accompanied on the opposite side with the development of two complete teeth. It is considered that the Owenian theory of the homologies of Mammalian teeth, based on the hypothesis that the typical series is composed of a definite number of teeth, some of which may be absent in particular cases, is untenable; and a new view is propounded as to the homology of multiple parts.

BAUR, G. [See p. 54, *Monotremata*.]

BEAUREGARD, H. [See p. 25, *Chiroptera*, and p. 48, *Cetacea*.]

BEDDARD, F. E. [See p. 22, *Primates*, p. 32, *Rodentia*, and p. 36, *Octodontidae*.]

BEEVOR, C. E. [See p. 22, *Primates*.]

BENEDEN, P. J. V. [See p. 48, *Cetacea*.]

BLANC, L. Sur un Cas Remarquable de Dédoublément de la Région Tarso-Métatarsienne (Schistomelie). *Ann. Soc. Linn. Lyon* (2) xxix, pp. 40-51, figs.

Describes the anatomy of the hind foot of a Calf exhibiting a duplication of the metatarsus and pes, with the development of a third digit on one side of the duplicated pes.

BLANFORD, W. T. The Age of the Himalayas. *Geol. Mag.* (3) ix, pp. 161-168.

A list is given of the Mammalian fauna of Tibet, with notes on its evolution and insulation. [See p. 45, *Cervida*, and p. 46, *Camelida*.]

BOCAGE, J. V. B. DU. [See p. 25, *Chiroptera*.]

BOLAM, G. [See p. 26, *Vespertilionida*.]

\*BONNET, B. Grundriss der Entwicklungsgeschichte der Hausäugethiere. Berlin : 1891, 282 pp., figs.

BOULE, M. [See p. 6, GAUDRY, and p. 37, *Proboscidea*.]

BOUVIER, E. L. [See p. 30, *Pinnipedia*, and p. 48, *Cetacea*.]

BÜCHNER, E. [See p. 33, *Sciurida*, and p. 35, *Dipodida*.]

BUCKLEY, J. E. [See p. 7, HARVIE-BROWN & BUCKLEY.]

BUXTON, E. N. Short Stalks ; or Hunting Camps, North, South, East, and West. London : 1892, 8vo, 405 pp., illustrated.

A fully illustrated sporting account of many of the species of large game from various parts of the world.

CACCIAMALI, G. B. Sulla Classificazione dei Mammiferi. *Riv. Ital. Sci. Nat.* xii, pp. 49-51.

CAMERON, A. G. [See p. 44, *Cervida*.]

CANNIEU, A. [See p. 32, *Rodentia*.]

CAPELLINI, G. [See p. 48, *Cetacea*.]

CHAPMAN, F. M. Notes on Birds and Mammals observed near Trinidad, Cuba, with Remarks on the Origin of West Indian Bird Life. *Bull. Am. Mus. Nat. Hist.* iv, pp. 279-350.

Contains a few notes on the Mammals of S. Cuba, with description of a new subfossil species of *Hutia*. [See p. 36, *Octodontida*.]

CHAPMAN, H. [See p. 22, *Primates*, and p. 36, *Octodontida*.]

CHIEVITZ, J. H. Sur l'Existence de l'Area Centralis Retinæ dans les Quatres Premières Classes des Vertébrés. *Overs. Dan. Selsk.* 1891, pp. 239-258.

CHRISTY, M. [See p. 36, *Leporida*.]

CIACCIO, G. V. [See p. 40, *Equida*.]

COLLETT, R. [See p. 24, *Cercopithecoida*.]

COOK, J. H. [See p. 29, *Ursida*.]

COPE, E. D. A Contribution to a Knowledge of the Fauna of the Blanco Beds of Texas. *P. Ac. Philad.* 1892, pp. 226-229.

Several Mammals are recorded from these beds, which are of late Tertiary age ; among them being a new *Mastodon*. [See p. 37, *Proboscidea*.]

[COPE, E. D.] On False Elbow-Joints. P. Am. Phil. Soc. xxx, pp. 285-291, pls. ix & x.

——. Points in the Kinetogenesis of the Limbs of Vertebrates. T. c. pp. 282-285.

——. [See also p. 40, *Equidæ*, and p. 52, *Marsupialia*.]

CRAGIN, F. W. [See p. 46, *Camelidæ*.]

DEPÉRET, C. La Faune de Mammifères Miocènes de la Grive-St-Alban (Isère), et de quelques autres Localités du Bassin du Rhone. Arch. Mus. Lyon, v, art. 2, 96 pp., 4 pls.

An important revision of all the Mammals hitherto described from these formations, with notices of a number of recently discovered specimens and descriptions of new forms. The author recognizes a total of 47 named species from Grive-St-Alban, of which 4 are new, while there are also several new varieties. Especial attention is directed to the *Chalicotheriida*, and it is concluded that the older forms from Sansan and Grive-St-Alban belong to *Macrotherium*, while the Eppelsheim species pertains to *Chalicotherium*. The name *M. grande* is adopted for the species described. It is concluded, on account of the structure of both the skull and the limbs, that the group should be placed among the *Perissodactyla*. The fauna of Mt. Ceindre includes 18 named species, 3 of which are new. [See *Simiidæ*, *Rhinolophidæ*, *Vespertilionidæ*, *Soricidæ*, *Felidæ*, *Viverridæ*, *Mustelidæ*, *Chalicotheriidæ*, and *Suidæ*.]

——. Les Animaux Pliocènes du Roussillon. Mém. Soc. Géol.-Pal. iii, pp. 117-127, pls. i & ii.

The completion of the Mammalian portion of the memoir quoted in Zool. Rec. xxviii, *Mamm.* p. 7. The forms described include *Felis*, *Ursus*, *Lagomys*, *Hipparion*, *Cervus*, *Capreolus*, and *Dolichopithacus*. [See, p. 35, *Muridæ* and, p. 46, *Cervidæ*.]

DOLLO, L. Sur la Morphologie des Côtes. Bull. Sci. Fr. Belg. xxiv, pp. 1-19.

It is contended, in the first place, that ribs have not an inter-vertebral origin; and, in the second, that hæmapophyses are homologous with one another throughout the length of the vertebral column. The former view is illustrated by the conditions obtaining in the *Sirenia*.

DUN, W. S. [See p. 52, *Marsupialia*.]

DUVAL, M. [See p. 32, *Rodentia*.]

EARLE, C. [See p. 38, *Amblypoda*, and p. 42, *Titanotheriidæ*.]

EGLINGTON, W. [See p. 12, *NICOLLS*.]

FABRINI, W. [See p. 28, *Felidæ*.]

FAUVEL, A. A. La Faune du Chan-toung (Chine). *Rev. Quest. Sci.* (2) i, pp. 455-492.

Contains a notice of the prehistoric and living Mammals.

FILHOL, H. [See p. 27, *Macroscelididæ*, and p. 30, *Creodonta*.]

FISERIUS, E. [See p. 32, *Rodentia*.]

FORBES, H. O. [See p. 30, *Pinnipedia*.]

FRENKEL, M. Du Tissu Conjonctif dans le Lobule Hépatique de certains Mammifères. *C.R. Soc. Biol.* 1892, pp. 38 & 39.

FREUND, P. [See p. 33, *Rodentia*.]

GADOW, H. [See p. 52, *Marsupialia*.]

GAUDRY, A. Excursion dans l'Amérique du Nord. *Bull. Soc. Géol.* (3) xix, pp. 936-1024.

Contains notes on American fossil Mammals and their phylogeny.

—. [See also p. 34, *Cercopithecidæ*.]

— & BOULE, M. Matériaux pour l'Histoire des Temps Quaternaires, pt. 4, pp. 105-130, pls. xx-xxiv. Paris: 1892, sm. 4to.

Treats of *Hyæna*, *Ursus*, and *Canis lupus*.

GEBERG, A. Ueber die Endigung des Gehörnerven in der Schnecke der Säugethiere. *Anat. Anz.* viii, 20-22.

GEHUCHTEN, A. v. Les Cellules Nervenses du Sympathique chez quelques Mammifères et chez l'Homme. *Cellule*, viii, pp. 83-85, pl.

It is concluded that the nervous elements in the sympathetic of Mammals are strictly comparable to those of the cerebro-spinal system. They are provided with two kinds of prolongations—one long and the other short; and always end freely.

GERMAIN, H. [See p. 24, *Cebidæ*.]

GILIS, P. Anatomie des Scalènes (Costotrachélians) chez les Ruminants, les Solipèdes, et les Carnassiers. *C.R. Soc. Biol.* 1892, pp. 464-467.

—. [See also p. 33, *Rodentia*.]

GORJANOVIC-KRAMBERGER, D. O. [See p. 48, *Cetacea*.]

GREVÉ, C. [See p. 28, *Carnivora*.]

HAMILTON, D. Records of Sport in Southern India. London: 1892, 4to, 284 pp., illustrated.

Contains sporting accounts of many Indian Mammals.

HARTING, J. E. Vermin of the Farm. *J. R. Agric. Soc.* (3) iii, pp. 205-231 & 463-478, figs.

A popular illustrated account of the various Mammals supposed to be injurious to the English farmer. Contains an account of the present plague of *Microtus* (= *Arvicola*) *agrestis* in the south of Scotland.

—. [See also p. 30, *Mustelidæ*, and p. 34, *Muridæ*.]

HARVIE-BROWN, J. A., & BUCKLEY, E. A Vertebrate Fauna of Argyll and the Inner Hebrides. Edinburgh : 1892, 8vo, 252 pp., illustrated.  
Includes an account of the Mammals.

HENNEGUY, L. F. Sur la Constitution de l'Endoderm des Mammifères. C.R. Soc. Biol. 1892, pp. 277-279.

HEPBURN, D. [See p. 23, *Primates*.]

HICKS, H. [See p. 37, *Proboscidea*.]

HILL, A. The Hippocampus. P. R. Soc. lii, p. 5 (Abstract).

The subject of this paper was to test the deviation of the Hippocampus from the normal type in such Mammals as are devoid of smell, or possess this sense in a very limited degree. It was discovered that the fascia dentata was absent in those forms which possess no olfactory bulb or tract.

——. [See also p. 54, *Monotremata*.]

HOERNES, R. [See p. 47, *Chæropotamida*.]

HOFMANN, A. Beiträge zur Miocänen Säugethier-fauna der Steiermark. JB. geol. Reichsanst., xlii, pp. 63-76, pls. ii & iii.

A continuation of the author's previous researches on the Miocene fauna of Styria. The species described are *Chalicomys jägeri*, *Hyænarctus brevirohinus*, *Trochictis tazodon*, *Hyomoschus peneckeï*, and *Sorex styriacus*. [See, p. 27, *Soricida*, p. 29, *Ursida*, and, p. 46, *Tragulida*.]

HOWES, G. B. Notes upon the Shoulder-Girdle of certain Dicynodont Reptiles. J. Anat. Phys. xxvi, pp. 403-405.

It is incidentally mentioned that the coracoid process of the *Eutheria* and *Metatheria* represents the epicoracoid of the Monotremes, and also that the term precoracoid is inapplicable to the latter element.

HOWORTH, Sir H. H. [See p. 37, *Proboscidea*.]

HUDSON, W. H. The Naturalist in La Plata. London : 1892, 8vo, 388 pp., illustrated.

Contains accounts of the habits of many of the Argentine Mammals, more especially the Huanaco and the Viscacha.

HUTCHINSON, H. N. Extinct Monsters. London : 1892, 8vo, 254 pp., illustrated.

Contains restored figures of several species of extinct Mammals.

JENTINK, F. A. [See p. 34, *Murida*.]

KOLMANN, —. [See p. 24, *Cercopithecida*.]

KŘÍŽ, M. Die Höhlen in den Mährischen Devonkalken und ihre Vorzeit. JB. geol. Reichsanst., xli, pp. 442-570, pls. viii & ix.

An account of explorations in the caverns of northern Moravia, with details of their fauna.

KÜKENTHAL, W. Ueber den Ursprung und die Entwicklung der Säugetierzähne. Jen. Z. Nat. xxvi, pp. 469-489. Translated in Ann. N. H. (6) ix, pp. 279-285.

A recapitulation and further development of the author's views as to the evolution of Mammalian teeth. The theory that the Whales are connected by means of *Zeuglodon* with the Seals is disputed.

—. Ueber die Entstehung und Entwicklung der Säugetierstammes. Biol. Centralbl. xiii, pp. 400-413. Translated in Ann. N. H. (6) x, pp. 365-380.

The author summarizes his views as to the relationship between Mammals and the lower Vertebrates. He concludes that in the Theromorous or Anomodont Reptiles the original state of the dentition was that of polyphyodontism, while in the marsupial and placental Mammals it was diphyodont. In consequence, however, of the specialization of the individual teeth in the Anomodonts, all dentitions except the first have been suppressed; while in the Marsupials at least one tooth of the second dentition became functional. On the other hand, in spite of the specialization, both series of teeth appear in Placentals. Later on, the author considers that his view as to the formation of complex Mammalian teeth by the fusion of simple denticles is supported by the cheek-teeth of the *Multituberculata*. In the *Vertebrata*, as a whole, it appears, however, that the development of the dentition is primarily traceable to the fission of individual teeth. In regard to the relations of Mammals to other groups, it is urged that their ancestors were not Anomodont Reptiles, but primeval forms (from which the Anomodonts themselves may have diverged), living during the Palaeozoic period, and having a generalized dentition of simple conical teeth. From these were developed the Multituberculate Mammals; of which the existing Monotremes are considered to be a specialized side-branch. The Marsupials are likewise considered to be another early branch from this same ancient stem, their dentition being traceable to a modification of the Multituberculate type. Finally, it is concluded that Placentals are not descended from Marsupials; the one having the second dentition as the permanent series, while in the other the first set persists.

—. [See also p. 43, *Cetacea*.]

KULAGIN, N. [See p. 29, *Canidæ*.]

LANGKAVEL, B. [See p. 29, *Canidæ*.]

LATASTE, F. [See p. 25, *Chiroptera*, and p. 36, *Leporidae*.]

LECHE, W. Studien über die Entwicklung des Zahnsystems bei den Säugethiere. Morph. JB. xix, pp. 502-547, figs.

An important memoir, still further elaborating the subject of the succession and homologies of the Mammalian dentition. Kükenthal's conclusions are discussed in detail; and the author's own observations on dental development fully illustrated. Taking *Erinaceus* as a starting-

point, the author has studied the development of the teeth and the relations of the milk and permanent series in the following genera, viz. : *Talpa*, *Sorex*, *Didelphys*, *Myrmecobius*, *Perameles*, *Trichosurus*, *Phascogale*, *Tatusia*, *Dasyurus*, *Balanoptera*, *Procyon*, *Felis*, and *Canis*. In discussing the relations between the milk and permanent dentitions, it is shown that the teeth of the latter series are developed on the inner side of those of the former ; while, contrary to the view of Kükenthal, reasons are given for considering the milk-dentition to be both auto-genetically and phylogenetically the elder of the twain. As the result of all the forms examined, it is further concluded that the molars belong morphologically to the first dentition, i.e., they are milk-teeth without vertical successors. The author takes the opportunity of mentioning that his previous views as to the teeth of Bats are incorrect ; it now appearing that the almost completely tritubercular nature of their molars is the result of a kind of degeneration, and is in nowise primitive. It is also urged that the term, second dentition, is not the equivalent of persistent dentition, seeing that in the latter the molars belong to the first series ; while, as in *Erinaceus*, some of the anterior teeth may likewise pertain to the first series. Hence the following stages of development of Mammalian dentition may be distinguished—(1) When the permanent dentition consists solely of teeth of the first series, e.g., *Odontoceti*. (2) When the persistent dentition is composed of teeth of the first series, with the exception of the last premolar, e.g., *Marsupialia*. (3) When the permanent dentition comprises molars of the first dentition, with incisors, canines, and premolars belonging partly to the first and partly to the second series, e.g., *Erinaceus*. (4) When the permanent dentition is formed exclusively, with the exception of the molars, of teeth of the second series, as in all the higher Mammals. Later on it is argued that the monophyodontism of the inferior Mammals is the result of the non-appearance of the second dentition, whilst in the higher types it is produced by the suppression of the first series, that is to say by retrogressive evolution. In opposition to the view that the milk-dentition is a recent addition, the author is inclined to admit that it is, on the contrary, the second dentition, which has been but gradually acquired. With regard to the so-called “*Zahnwall*” and “*Zahnfurche*,” the author arrives at the same results in *Erinaceus*, as RÖSE in Man ; *Zahnwall* and *Zahnfurche* having no relation to the origin or development of teeth. On the contrary, they have merely a relation to the configuration of the buccal cavity during that period of life in which teeth are wanting. To the foregoing ontogenetical researches are added observations on the formation of the dental system in general. Amongst these may be noted the important statement that in all *Mammalia* where homodontism is found (*Odontoceti*, *Edentata*), it is not a primitive character, but the result of retrogressive evolution. Additional highly interesting remarks are given on progressive and retrogressive evolution of the Mammalian dentitions.

LECHE, W. [See also p. 52, *Marsupialia*.]



LENHOSSEK, M. v. Die Nervenursprünge und Endigungen im Jacobson'schen Organ des Kaninchens. *Anat. Anz.* vii, pp. 628-635.

LYDEKKER, R. Discovery of Australian-like Mammals in South America. *Nature*, xlv, pp. 11 & 12.

Notices the discovery in the Tertiary of South America of Marsupials allied to the Thylacine.

—. [See also p. 28, *Viverridæ*, p. 41, *Rhinocerotidæ*, p. 43, *Bovidæ*, p. 45, *Cervidæ*, p. 47, *Anoplotheriidæ*, p. 49, *Cetacea*, and p. 51, *Sirenia*.]

MACPHERSON, H. A. A Vertebrate Fauna of Lakeland. Edinburgh: 1892, 8vo, 650 pp., illustrated.

Contains notices of the Mammals of Cumberland, Westmoreland, and North Lancashire, and two special articles on the Red Deer and Pine Marten.

MAGGI, D. [See p. 23, *Primates*.]

MALAQUIN, A. Sur la Presence de Vertebres dans l'Eocene Inférieur du Nord de la France. *Ann. Soc. Géol. Nord.* xix, pp. 315-319.

Records a large *Coryphodon*.

MAJOR, C. J. F. Le Gisement Ossifère de Mitylini. In "Samos," by C. Stefani. Lausanne: 1892, 4to.

The author recapitulates his views as to the Upper Miocene age of the deposits of Samos, Pikermi, and Maragha. An important discussion is given on the affinities of *Chalicotherium*, in which it is suggested that its resemblances to *Palaeosyops* do not indicate genetic relationship. It is concluded that the genus is quite distinct from *Macrotherium*, of the Middle Miocene of Sansan, and that the two together represent a distinct order—the *Ancylopoda*. A list is given of the Mammals of Samos.

MARES, F. Expériences sur l'Hibernation des Mammifères. *Mém. Soc. Biol.* 1892, pp. 313-320.

MARSH, O. C. Discovery of Cretaceous Mammals: Part 3. *Am. J. Sci.* (3) xliii, pp. 249-262, pls. v-xi.

Describes a number of teeth from the Laramie Cretaceous of Wyoming, many of which are referred to new genera and species of *Multituberculata* and *Marsupialia* [q.v.].

—. [See also p. 38, *Condylarthra*, and p. 40, *Equidæ*.]

MARTIN, H. T. [See p. 34, *Castoridæ*.]

MARTIN, K. [See p. 37, *Proboscidea*.]

MAŠKA, K. J. Die Diluviale Fauna und Spuren des Menschen in der Schoschunker Höhle in Mähren. *JB. geol. Reichsanst.* xli, pp. 415-422, pl. vii.

Records the occurrence of human remains with those of other Vertebrates in a Moravian cavern. The milk-dentition of *Hyæna crocuta* (*spelæa*) is figured.

**MATSCHIE, P.** Ueber einige Afrikanische Säugethiere. SB. nat. Fr. 1892, pp. 110-115 & 130-140. [See *Felida*, *Procaviida*, *Equida*, and *Bovida*.]

——. Ueber eine kleine Sammlung von Säugethieren und Reptilien, welche Herr L. Conradt aus Usambaru (Deutsch-Ost-Afrika), heimgebracht hat. *T. c.* pp. 101-110.

A few Micro-Mammalia are mentioned.

——. Ueber die Verbreitung einiger Säugethiere in Afrika. *T. c.* pp. 223-235.

Chiefly devoted to a criticism of True's paper (*infra*, p. 19), but also contains a description of a new *Cynocephalus* [see *Cercopithecida*, p. 24].

——. Ueber einige Neuerwerbungen des Berliner Zool. Gartens. *T. c.* pp. 220-223.

Mainly deals with certain Felines.

**MELI, M.** Sopra alcuni Resti di Mammiferi Fossili nei Terreni Quaternari della Provincia di Roma. Boll. Soc. Geol. Ital. x, 5 pp.

Records remains of a few recent and extinct species from the Pleistocene deposits in question.

**MERRIAM, C. H.** The Geographic Distribution of Life in North America, with special reference to the *Mammalia*. P. Biol. Soc. Washington, vii, pp. 1-64, map.

North America is divided, from north to south, into the Boreal, Transition, Sonoran, and Tropical zones, severally distinguished by a more or less characteristic Mammalian fauna. These zones are proved to coincide very closely with those founded by different writers respectively on the eastern and western sides of the continent, and are now shown to be transcontinental. The Boreal region is divided into an Arctic and a Boreal zone, the latter comprising the area south of the treeless Arctic districts, sweeping across the continent from Newfoundland and the southern shore of Hudson Bay to Alaska; and on its southern border giving off three prolongations running into the United States, down the Alleghanies, the Rocky Mountains, and the Cascade and Sierra Nevada ranges. The Transitional zone, as its name implies, is a kind of neutral area between the Boreal and the Sonoran. It is strongly urged that the Boreal zone and the northern portion of the Palearctic region really form one zoological region, but that from the latter, as ordinarily understood, should be removed an area corresponding with that of the Sonoran zone. Full lists are given of the Mammalian fauna of the several zones, among which are some new subgeneric names, together with certain amendments on some generic terms generally in use. It is considered that the Glacial period has played a very important part in the present distribution of the North American fauna; it being even urged that the S. American Llamas were originally northern forms driven as far south as the latitude of the Andes by the cold. The paper con-

cludes with a criticism of some of Wallace's views, in which it is considered that he has not allowed sufficient importance to the effects of climate as a factor in distribution. [See, p. 33, *Sciuridæ*, p. 34, *Muridæ*, and, p. 35, *Geomyidæ*.]

[MERRIAM, C. H.] Descriptions of Nine New Mammals collected by E. W. Nelson, in the States of Colima and Jalisco, Mexico. *T. c.* pp. 164-174.

——. [See p. 27, *Soricidæ*, p. 34, *Muridæ*, and p. 35, *Geomyidæ*.]

MEYER, A. B. [See p. 25, *Cercopithecidæ*.]

MÖBIUS, K. [See p. 37, *Proboscidea*.]

MOEWES, F. [See p. 44, *Giraffidæ*.]

MORGAN, C. L. Factors in the Evolution of the *Mammalia*. *Nat. Sci. i.* pp. 97-101.

Criticizes some of Scott's views on this subject.

MORENO, F. P. [See p. 49, *Cetacea*.]

MUMMERY, J. H. Some Points in the Structure and Development of Dentine. *Phil. Tr. clxxxii B*, pp. 527-545, pls. xxxvi-xxxix.

The full text of the memoir quoted in *Zool. Rec. xxviii, Mamm.* p. 13.

NACHTRIEB, H. F. [See p. 24, *Lemuroidea*.]

NEHRING, A., *Verh. Anthrop. Ges.* 1892, p. 86, records 14 species of fossil Mammals from a cave near Schaffhausen; all but one being small forms.

——. [See also p. 45, *Cervidæ*, and p. 48, *Suidæ*.]

NEWTON, E. T. [See p. 34, *Castoridæ*.]

NICOLLS, J. A., & EGLINGTON, W. *The Sportsman in South Africa*. London: 1892, 8vo, pp. vi & 147, pls.

An illustrated descriptive work on all the large game of the districts lying to the south of the Zambesi [see, p. 44, *Bovidæ*].

OGILBY, J. D. *Catalogue of Australian Mammals, with Introductory Notes on General Mammology*. Sydney: 1892, 8vo, 142 pp., figs.

The completion of the work, of which an advanced publication of the first portion is noticed in *Zool. Rec. xxviii, Mamm.* p. 14. The list includes both terrestrial and aquatic forms; and the author adopts the view of the indigenous origin of the Dingo. [See p. 35, *Muridæ*.]

OSBORN, H. F. *The History and Homologies of the Mammalian Molar Cusps*. *Anat. Anz. vii*, pp. 740-747.

In the course of this paper the author emphasizes his views that the primitive type of Mammalian molar was a simple cone; and contests the theory that the molars of the *Multituberculata* are due to the fusion of originally separate teeth.

——. [See also p. 31, *Creodonta*, p. 37, *Amblypoda*, p. 39, *Condylarthra* and *Perissodactyla*, p. 40, *Lophiodontidæ*, and p. 46, *Protoceratidæ*.]

OSBORN, H. F., & WORTMAN, J. L. Fossil Mammals of the Wahsatch and Wind River Beds. Bull. Am. Mus. Nat. Hist. iv, pp. 81-148, figs., pl. iv.

A very important paper, recording the results of working out a collection obtained in 1891. The Palæontological portion is divided into the four following sections, of which the third is by Wortman, while the others are by Osborn:—viz., (1) Homologies and Nomenclature of the Mammalian Molar Cusps; (2) the Classification of the *Perissodactyla*; (3) the Ancestry of the *Felidæ*; (4) Taxonomy and Morphology of the Primates, Creodonts, and Ungulates. In the first part of the paper attention is principally directed to the subsidiary cusps of the Mammalian molar, for which the general term *style* is suggested. [See *Creodonta*, *Perissodactyla*, and *Amblypoda*.]

PALMER, T. S. [See p. 30, *Otariidæ*.]

PAVLOW, M. [See p. 41, *Rhinocerotidæ*.]

PETRINI, —. [See p. 28, *Carnivora*.]

POHLIG, H. [See p. 37, *Proboscideu*, and p. 45, *Cervidæ*.]

POLAND, H. Fur-bearing Animals in Nature and in Commerce. London: 1892, 8vo, pp. lvi & 392, illustrated.

Contains tables of the number of pelts annually obtained from the various species of fur-bearing animals, with notices of the animals themselves. Reviewed in Nat. Science, i, pp. 624-626.

POMEL, A. [See p. 33, *Sciuridæ*, p. 35, *Muridæ*, and p. 44, *Giraffidæ*.]

POMMEROL, F. [See p. 40, *Equidæ*.]

POUCHET, G. [See p. 49, *Cetacea*.]

POUSARGUES, E. DE. [See p. 33, *Rodentia*, and p. 45, *Cervidæ*.]

QUELCH, J. J. [See p. 25, *Chiroptera*.]

REGNAULT, F. (1) Fouilles dans le Terrain Miocène Moyen de St. Gaudens (Haute-Garonne)—Le *Dryopitheque*, (2) Fouilles dans les Grottes de Gargas et de Malarnaud. C.R. Ass. Fr. Sci. xix, pt. 2, pp. 408-411, figs.

Figures a mandible of *Dryopithecus*, and a human lower jaw very similar to the one from Naulette.

REITTER, E. DE. Sur la Morphologie et l'Evolution de l'Epithelium du Vagin des Mammifères. Mém. Soc. Biol. 1892, pp. 101-107.

ROBINSON, A. Development of Segmentation-Cavity, Archenteron, Germinal Layers, and Amnion of Mammals. Q. J. Micr. Sci. xxxiii, pp. 369-455, 5 pls.

—. [See also p. 33, *Rodentia*.]

RÖSE, C. Ueber die Entstehung und Formabänderungen der Menschlichen Molaren. *Anat. Anz.* vii, pp. 392–421, figs.

The author gives a detailed description of the cheek-teeth of human embryos, of various races, and indicates their mutual resemblances and differences, and their general bearing on the phylogeny of molars. It is stated that although, in some respects, the immature molars of Europeans resemble those of non-European nations, the reduction in the number of the tubercles found in the former is peculiar to them. It is further shown that this reduction-process tends to reproduce the original tritubercular type; the tubercles which disappear being those which have been superadded to the primitive triangle. It is added that Cope is correct in regarding the human first upper milk-molar as being formed strictly on the tritubercular type. It is shown that in all the upper cheek-teeth, the first cusp to appear is the antero-external, hitherto regarded as the paracone, but which is identified by the author with the protocone.

——. Ueber die erste Anlage der Zahnleiste beim Menschen. *Op. cit.* viii, pp. 29–32.

——. Ueber die schmelzlosen Zahnrudimente des Menschen. *Verh. deutsch. odont. Ges.* iv, pp. 1–28, figs.

Concludes that the toothlike bodies devoid of enamel frequently found in the front of human jaws are due to caries or other disease, and do not represent missing teeth.

——. Zur Phylogenie des Säugetiergebiss. *Biol. Centralbl.* xii, pp. 624–638.

A discussion as to the relationship of the teeth of Mammals to those of Reptiles. It is concluded that Placentals, Marsupials, and Menotremes are correlated, but not genetically related groups.

——. [See also p. 51, *Edentata*, and p. 52, *Marsupialia*.]

ROTHSCHILD, W. Descriptions of Two New Mammals from New Guinea. *P. Z. S.* 1892, pp. 545 & 546. [See p. 53, *Phalangeridae* and p. 54, *Echidnidae*.]

RÜTIMEYER, L. Die Eocäne Säugethier-welt von Egerkingen. *Abh. Schw. pal. Ges.* xviii, pp. 1–153, pls. i–viii.

The full memoir, of which a preliminary *resumé* (*Zool. Rec.* xxvii, *Mamm.* p. 13) had been previously published, descriptive of recent additions to our knowledge of the Mammals of the Swiss Siderolites. Many of the new species were mentioned in the preliminary notice, but as they were unaccompanied by any diagnosis could not be recognized. The title-page is dated 1891, but the description of the plates 1892; and from internal evidence (p. 62), it is evident that the memoir was not published until the latter year.

The first of the descriptive portion of the memoir treats of the Ungulates, which are classified as follows : viz.—

- A. *Ungulata Trigonodontia* (? = *Condylarthra*).
- B. *Ungulata Zygodontia*.
  - I. *Imparidigitata*.
    - a. *Palæotheriida*.
    - b. *Lophiodontida*.
  - II. *Paridigitata*.
    - a. *Suina*.
    - b. *Selenodontia* (*Hyopotamus*, *Bachitherium*, etc.).

In the Trigonodonts it is argued that less importance should be assigned to the structure of the carpus and tarsus than to the trituberculism of the teeth. In the *Palæotheriida* the genus *Paloplothierium* is maintained, and a new species described ; while in the *Lophiodontida* there is likewise a new species of the type genus. *Pachynolophus* is divided into several subgenera, of which there is one new species ; the name *Hyracotherium siderolithicum* being still maintained for a member of this group, although its marked distinction from the typical *Hyracotherium* is mentioned.

Among the Artiodactyles, *Tapinodon gresslyi* is identified with *Hyopotamus* ; the skull from Hordwell referred by the Recorder to the former under the name of *Anthracotheerium gresslyi* being regarded as indicating a new form. *Hyopotamus picteti*, Lyd., is also considered to be identical with *H. gresslyi*, although identified by its founder with *Dacrytherium* [see p. 47]. Several new species of *Dichobunus* and *Xiphodonterium* are named ; and *Tetraselenodon* and *Bachitherium* are recorded from these beds, the former being placed near *Dichodon*, of which a new species is described.

Among the Rodents a new *Plesiarcetomys* is described, and certain Insectivores are identified with some from Quercy. In the Creodonts a lower molar, described as *Ailuravus*, is referred to the *Arctocyoniida*, with a suggestion of affinity to *Ælurus*. New species of *Hyænodon* and *Pterodon* are described, as well as a new genus of *Proviverriida*, approximating to the living African *Suricata* (*Rhizæna*).

In the Lemnroids, *Adapis* and *Cænopithecus* are compared, and new species of *Pelycodus*, *Hyopsodus*, and *Necrolemur* described.

The memoir concludes with a discussion of the homologies and nomenclature of the elements of the Mammalian molar, and a general survey of the fauna of the Siderolites and its relationships.

[See p. 24, *Lemnroidea*, p. 31, *Proviverriida* and *Arctocyoniida*, p. 32, *Hyænodontida*, p. 33, *Sciurida*, p. 40, *Lophiodontida*, p. 41, *Palæotheriida*, p. 47, *Dichodontida*, *Anoplothieriida*, *Cænotheriida*, and *Anthracotheeriida*.]

RÜTIMEYER, L. Die Eocänen Säugethiere von Egerkingen. Verh. Ges. Basel. x (Festschrift), pp. 101–129.

The first part of this paper deals with the author's earlier works in homologizing the cusps of Mammalian molars ; his own nomenclature

being contrasted with that subsequently published in the United States. The second portion has some general observations on the fauna of Egerkingen.

RUFFINI, H. [See p. 28, *Carnivora*.]

RUGE, G. [See p. 23, *Primates*.]

SAFFORD, J. M. The Pelvis of a *Megalonyx* and other Bones from Big-Bone Cave. Bull. Geol. Soc. Amer. iii, pp. 121-123.

SCHACHT, H. [See p. 28, *Carnivora*.]

SCHÄFF, E. [See p. 29, *Canidæ*.]

SCHELER, G. [See p. 45, *Cervidæ*.]

SCHLOSSER, M. Ueber die Deutung des Milchgebisses der Säugethiere. Verh. deutsch. odont. Ges. iv, 10 pp.

A recapitulation and discussion of recent views as to the homology and development of the milk dentition. In the course of the paper it is stated that living Elephants have no deciduous incisors.

—. Ueber die systematische Stellung der Gattungen *Plesiadapis*, *Protoadapis*, *Pleuraspidotherium*, and *Orthaspidotherium*. JB. Mineral. 1892, ii, pp. 238-240.

It is concluded that the first two of the genera named, which had been previously assigned to the Lemuroids, are more probably Rodents, although having a fuller dentition than any existing member of the order. On the other hand the genera *Pleuraspidotherium* and *Orthaspidotherium* are considered to represent Condylarthrous Ungulates, probably allied to the *Perissodactyla*. They had been previously referred to the *Insectivora*.

SCHÖNLAND, S. [See p. 41, *Equidæ*.]

SLATER, P. L. On a small Collection of Mammals brought by Mr. A. Sharpe from Nyassaland. P. Z. S. 1892, pp. 97 & 98.

8 species are noticed, and among these the range of *Tragelaphus angasi* is extended more to the north than was previously known.

—. [See also p. 24, *Cercopithecidæ*, and p. 43, *Bovidæ*.]

SCOTT, O. B. The Evolution of the Premolar Teeth in the Mammals. P. Ac. Philad. 1892, pp. 405-440.

In the first place the author refers to Fleischmann's objections to the view of the development of the more complex types of Mammalian molars from a simple cone, and to the homology between the cusps of those of the upper and lower jaws. It is considered that these objections cannot be sustained, more especially as the author believes that the Marsupials are not the ancestors of the Placentals. The author then proceeds to trace, in detail, the origin of the more complex types of premolars. Even when these teeth have assumed a completely molariform structure, their history is quite different from that of the molars, the elements which correspond in function and position to those of the latter not being

homologous therewith. The key to the homologies is afforded by the position of the protocone. As the premolars do not present quite the same degree of developmental constancy as the molars, the last of the series is adapted as the standard. The various cusps of the premolars are then contrasted with those of the molars, and new names proposed where necessary. It is concluded that while the inferior premolars may contain three elements which are homologous with molar cusps, the upper premolars contain but one cusp which can be homologized with a molar cusp; and, furthermore, that while in the molar crown the protocone is on the inner, and the protoconid on the outer side, in both sets of premolars, upper as well as lower, it retains its primitive position on the outer side. The following table exhibits the correspondence of position (not of homology) between the molar and premolar elements, when the whole are developed:—

## UPPER JAW.

MOLARS.		PREMOLARS.
<i>Protocone</i>	=	<i>Deuterocone.</i>
<i>Paracone</i>	=	<i>Protocone.</i>
<i>Metacone</i>	=	<i>Tritocone.</i>
<i>Hypocone</i>	=	<i>Tetartocone.</i>

## LOWER JAW.

<i>Protoconid</i>	=	<i>Protoconid.</i>
<i>Paraconid</i>	=	<i>Paraconid.</i>
<i>Metaconid</i>	=	<i>Deuteroconid.</i>
<i>Hypoconid</i>	=	<i>Metaconid.</i>
<i>Entoconid</i>	=	<i>Tetartoconid.</i>

The author next proceeds to point out the peculiarities of the premolar cusps in several of the orders. In an addendum it is mentioned that if Rôse's views as to the position of the protocone and paracone in the molars (*suprà*, p. 14) prove to be well-founded, then the cusps of the premolars and molars will be homologous, and the new terms proposed unnecessary.

—. [See also p. 31, *Creodonta*.]

SNELL, O. Das Gewicht des Gehirnes und des Hirnmantels der Säugethiere in Beziehung zu deren geistigen Fähigkeiten. SB. Ges. Morph. vii, pp. 90-94.

SOUTHWELL, T. [See p. 50, *Cetacea*.]

SPENCER, W. B. The Fauna and Zoological Relationships of Tasmania. Rep. Austr. Assoc. 1892; Address to Sect. D, 44 pp.

STEFANESCU, G. [See p. 37, *Proboscidea*.]

STEPHENS, F. [See p. 33, *Sciuridæ*.]

1892. [VOL. XXIX.]



STRUTHERS, J. [See p. 23, *Primates*.]

SUSSDORF, J. [See p. 48, *Suidæ*.]

SWAYNE, H. G. C. [See p. 43, *Bovidæ*.]

TAEKER, J. [See p. 36, *Ungulata*.]

THOMAS, O. Notes on Dr. W. Kükenthal's Discoveries in Mammalian Dentition. *Ann. N. H.* (6) ix, pp. 308-311.

In consequence of Kükenthal's recent investigations, the author is now disposed to admit that Mammals may have been originally diphyodont; although, at the same time, this view renders it very difficult to account for the condition obtaining in the Mesozoic *Triconodon*. It is contended that Kükenthal is incorrect in homologizing the changing premolar of the Marsupials with the third of the typical series, and that it really corresponds with the fourth of the same. After some discussion as to the question whether the premolars or milk-molars are homologous with the true molars, it is argued that Kükenthal's theory of the fusion of the teeth of the permanent and milk sets to form the molars cannot be sustained; but his view of the fission of multicuspid teeth to form the unicuspid ones of the *Cetacea* is supported.

——. On Mammals from Nyassaland. *P. Z. S.* 1892, pp. 546-554.

Describes 27 species of Mammals sent home by Mr. H. H. Johnston, which include 3 new varieties, among them the Lesser Pala. *Isomys* is regarded as distinct from *Mus*. [See p. 34, *Muridæ*, and p. 43, *Bovidæ*.]

——. On some Mammals from Mount Dulit in North Borneo. *T. c.* pp. 221-227, pls. xviii & xix.

21 species are recognized, among which are the new *Hemigale hosei*, *Tupaia montana*, *T. melanura*, and *Sciurus brookei*. [See p. 27, *Tupaiaidæ*, p. 29, *Viverridæ*, and p. 33, *Sciuridæ*.]

——. On some New *Mammalia* from the East Indian Archipelago. *Ann. N. H.* (6) ix, pp. 250-254.

A preliminary notice of the species described in the preceding paper, together with that of a new *Tragulidæ*. [See p. 46, *Tragulidæ*.]

——. On the *Mammalia* collected by Signor Leonardo Fea in Burma and Tenasserim. *Ann. Mus. Genov.* (2) x, pp. 913-949, pls. x & xi.

The list includes 114 species, all of which have been previously described. The name *Linsang* is adopted in lieu of *Prionodon*, and *Cervulus fea* is figured. *Orcella fluminalis* is identified with *O. brevirostris*.

——. On the probable Identity of certain Specimens, formerly in the Lidth de Jeude Collection, and now in the British Museum, with those figured by Albert Seba in his "Thesaurus," in 1734. *P. Z. S.* 1892, pp. 309-318.

——. [See also p. 27, *Centetidæ*, p. 38, *Hyracoidea*, and p. 43, *Bovidæ*.]

TOPINARD, B. [See p. 23, *Primates*.]

TROUESSART, E. L. [See p. 41, *Equidæ*.]

TRUE, F. W. An Annotated Catalogue of the Mammals collected by Dr. W. L. Abbott in the Kilima-njaro Region, East Africa. P. U. S. Nat. Mus. xv, pp. 445-480, pls. lxxv-lxxx.

Contains a complete list of all the Mammals from the district, with descriptions of three new species, and figures of others recently named. [See p. 33, *Sciuridæ*, and p. 34, *Muridæ*.]

TSCHERSKI, J. D. Wissenschaftliche Resultate der v. d. k. Ak. Wiss. zur Erforschung des Janalandes und der Neusibirischen Inseln in den Jahren 1885 und 1886 ausgesandten Expedition. Pt. 4. Beschreibung der Sammlung Posttertiärer Säugethiere. Mém. Ac. Petersb. xl, pp. 1-511, pls. i & vi.

The species described include *Felis tigris*, *Canis lupus*, *C. familiaris*, *Vulpes lagopus*, *Gulo luscus*, *Ursus maritimus*, *U. arctos*, *Phoca fasciata*, *Trichechus rosomarus*, *Spermophilus evermanni*, *Lemmus obensis*, *Cuniculus torquatus*, *Lepus variabilis*, *Bison priscus*, *Ovibos moschatus*, *Ovis nivicola*, *Colus saiga* [= *Saiga tartarica*], *Alces palmatus*, *Rangifer tarandus*, *Cervus canadensis*, v. *maral*, *Equus caballus*, and *Rhinoceros tichorhinus*. A skeleton of the recent *Equus przewalskii* is also described; and there are notices of the distribution of certain groups, of which the fossilized remains occur in the new Siberian islands. The occurrence of remains of the tiger at such a distance within the Arctic Circle is noteworthy.

TUCKERMANN, F. [See p. 23, *Primates*.]

TURNER, SIR W. [See p. 50, *Cetacea*, and p. 54, *Monotremata*.]

VAUGHAN, J. [See p. 41, *Equidæ*.]

WALDEYER, W. [See p. 51, *Sirenia*.]

WARD, B. Horn-Measurements and Weights of the Great Game of the World. London: 1892, 4to, 264 pp., illustrated.

— [See also p. 43, *Bovidæ*.]

WHITE, T. [See p. 29, *Canidæ*.]

WINGE, H. [See p. 25, *Chiroptera*.]

WITCHELL, C. A., & STRUGNELL, O. B. The Fauna and Flora of Gloucestershire. Stroud: 1892, 8vo, 301 pp., illustrated.

Contains an account of the Mammals of the district.

WOODWARD, M. F. [See p. 38, *Hyracoidea*.]

WORTMAN, J. L. [See OSBORN, and p. 46, *Proteroceratidæ*.]

ZIETZ, A. [See p. 53, *Marsupialia*.]

ZITTEL, K. A. Handbuch der Paläontologie. 1st Abtheil.—Paläozoologie, band iv, lief. 1. Munich: 1892, 8vo, 304 pp., illustrations.

This part of the work commences the Mammals, and includes the orders *Monotremata*, *Marsupialia*, *Edentata*, *Cetacea*, *Sirenia*, and the *Perissodactyle Ungulates*. The class is subdivided as follows:—

Subclass A. EPLACENTALIA.

Order 1. *Monotremata*.

2. *Allotheria* (*Multituberculata*).

3. *Marsupialia*.

Suborder a. *Polyprotodontia*.

b. *Diprotodontia*.

Subclass B. PLACENTALIA.

Order 4. *Edentata*.

5. *Cetacea*.

Suborder a. *Archæoceti*.

b. *Odontoceti*.

c. *Mystacoceti*.

Order 6. *Sirenia*.

7. *Ungulata*.

Suborder a. *Condylarthra*.

b. *Perissodactyla*.

c. *Artiodactyla*.

d. *Amblypoda*.

e. *Proboscidea*.

f. *Toxodontia*.

g. *Typotheria*.

h. *Hyracoidea*.

Order 8. *Tillodontia*.

9. *Rodentia*.

10. *Insectivora*.

11. *Chiroptera*.

12. *Carnivora*.

Suborder a. *Creodonta*.

b. *Fissipedia*.

c. *Pinnipedia*.

Order 13. *Primates*.

Suborder a. *Prosimiæ*.

b. *Simiæ*.

c. *Bimana*.

The Polyprotodont Secondary Mammals are classed among the *Marsupials*; while the existing *Myrmecobius* is made the type of a separate family.

## II.—FAUNAS.

### A.—RECENT.

*Britain.* See HARVIE-BROWN & BUCKLEY, p. 7; MACPHERSON, p. 10; and WITCHELL & STRUGNELL, p. 19.

*Asia.* See BLANFORD (Tibet), p. 4; FAUVEL (China), p. 6; THOMAS (Malayana and Burma), p. 18.

*Africa.* See ANDERSON, p. 3; MATSCHIE, p. 11; NICOLLS & EGLINGTON, p. 12; SCLATER, p. 43; THOMAS, p. 18; TRUE, p. 19.

*America.* See ALLEN (Galapagos), p. 2; CHAPMAN (Cuba), p. 4; LATASTE (Chilian Bats), p. 25; MERRIAM, p. 11; QUELCH (Guiana Bats), p. 25; WINGE (Brazilian Bats), p. 25.

*Australia.* See OGILBY, p. 12; SPENCER, p. 17; ZIETZ, p. 19.

### B.—FOSSIL.

*Europe.* See DEPÉRET (France), p. 5; GAUDRY & BOULE (France), p. 6; HOFMANN (Styria), p. 7; MAŠKA (Moravia), p. 10; MAJOR (Pikermi and Samos), p. 10; MELI (Italy), p. 11; NEHRING (Germany), p. 12; RÛTIMEYER (Switzerland), p. 14.

*Asia.* See TSCHERSKI (Siberia), p. 19.

*N. America.* See COPE, p. 4; MARSH, p. 10; OSBORN & WORTMAN, p. 13; SCOTT, p. 16.

## III.—SPECIAL STRUCTURES, DEVELOPMENT, ETC.

CIRCULATORY SYSTEM.—See BEAUREGARD, *Chiroptera*, p. 25.

DENTITION.—See ALLEN, *Chiroptera*, p. 25; BALLOWITZ, *Edentata*, p. 51; BATESON, p. 3; FREUND, *Rodentia*, p. 33; KÜKENTHAL, p. 49; LECHÉ, p. 8; LYDEKKER, *Sirenia*, p. 31; OSBORN, p. 12; RÖSE, *Edentata*, p. 51; and *Marsupialia*, p. 52; SCOTT, p. 16; SCHLOSSER, p. 17; TAEKER, *Ungulata*, p. 36; THOMAS, p. 18, and *Centetidae*, p. 27; TOPINARD, *Primates*, p. 23; WOODWARD, *Hyracoidae*, p. 38.

DEVELOPMENT, EMBRYOLOGY, AND REPRODUCTION.—See CANNIEU, *Rodentia*, p. 32 (penis); DUVAL, *Rodentia*, p. 32 (placenta); FISERIUS, *Rodentia*, p. 32; FLEISCHMANN, *Rodentia*, p. 33 (placenta); POUSARGUES, *Rodentia*, p. 33 (penis); ROBINSON, p. 13 (germinal layers), and *Rodentia*, p. 33 (yolk-sac and placenta).

DIGESTIVE SYSTEM.—See CARLIER, *Erinaceidae*, p. 27 (histology); TURNER, *Cetacea*, p. 50; WALDEYER, *Sirenia*, p. 51.

EAR.—See GEBERG, p. 6.

EYE.—See CHIEVITZ, p. 4.

GLANDS.—See PETRINI, *Carnivora*, p. 28; TUCKERMANN, *Primates*, p. 23.

HISTOLOGY.—See CARLIER, *Erinaceidae*, p. 27 (digestive system)

FRENKEL, p. 6 (hepatic connective tissue); HENNEGUY, p. 7 (endoderm); MUMMERY, p. 12 (dentine); RETTERER, p. 13 (epithelium).

MORPHOLOGY.—See CAMERON, p. 44 (antlers); DOLLO, p. 5 (ribs); HEPBURN, *Primates*, p. 23 (grooves in hand and foot); HOWES, p. 7 (shoulder-girdle); KÜKENTHAL, p. 8 (teeth); OSBORN, p. 12 (teeth); RÜSE, p. 14 (teeth); SCOTT, p. 16 (teeth); SCHLOSSER, p. 16 (teeth); THOMAS, p. 18 (teeth); TOPINARD, *Primates*, p. 23 (teeth).

MUSCLES.—See ALLEN, *Carnivora*, p. 28; BEDDARD, *Primates, infra*, and *Octodontidæ*, p. 36; GILIS, p. 6, and *Rodentia*, p. 33; HEPBURN, *Primates*, p. 23; RUGE, *Primates*, p. 23.

NERVES AND BRAIN.—See BEDDARD, *Rodentia*, p. 32, and *Octodontidæ*, p. 36; BEEVOR, *Primates, infra*; CHAPMAN, *Primates, infra*; GEBERG, p. 6; GEHUCHTEN, p. 6; HEPBURN, *Primates*, p. 23; HILL, p. 7, and *Monotremata*, p. 54; LENHOSSÉK, p. 10; RUFFINI, *Carnivora*, p. 28; SYMINGTON, *Marsupialia*, p. 53; TURNER, *Monotremata*, p. 54.

NOSE.—See LENHOSSÉK, p. 10 (Jacobson's organ); SYMINGTON, *Marsupialia*, p. 53 (Jacobson's organ).

OSTEOLOGY.—See ALLEN, p. 2, and *Carnivora*, p. 28; BAUR, *Monotremata*, p. 54; COPE, p. 5; HOWES, p. 7; MAGGI, *Primates*, p. 23; STRUTHERS, *Primates*, p. 23.

#### IV.—SPECIAL WORK.

(*Extinct groups and species are indicated by a †.*)

##### 1. PRIMATES.

BEDDARD, F. E. Contributions to the Anatomy of the Anthropoid Apes. P. Z. S. 1892, pp. 118–120 (Abstract).

Compares the myology of *Anthropopithecus* [*Troglodytes*] *calvus* with *A. niger*; and also shows that an Ape recently exhibited in the Zoological Society's Gardens, and believed to be an adult example of *Simia morio*, was immature.

BEEVOR, C. E. On the Course of the Fibres of the Cingulum and the Posterior Parts of the Corpus Callosum and Fornix in the Marmoset Monkey. Phil. Tr. clxxxii B, pp. 135–199, pls. xx–xxiv.

The full text of the memoir quoted in Zool. Rec. xxviii, *Mumm.* p. 22.

CHAPMAN, H. Observations upon the Brain of the Gorilla. P. Ac. Philad. 1892, pp. 203–212, pls. xi & xii.

The author points out the features in which the Gorilla's brain differs from those of other Anthropoids, and suggests that the Gorilla may be descended from *Cynocephalus*; the other forms having totally distinct origins.

HEPBURN, D. Comparative Anatomy of the Muscles and Nerves of the Superior and Inferior Extremities of the Anthropoid Apes. *J. Anat. Phys.* (2) vi, pp. 149-186 & 324-356, pls. iii & ix.

An elaborate comparison of these structures in a large number of the *Primates*.

——. The Integumentary Grooves on the Palm of the Hand and Sole of the Foot of Man and the Anthropoid Apes. *Op. cit.* xxvii, pp. 112-130, pls. vii-ix.

It is found that both hand and foot bear external evidence of the muscular homologies existing between them; and as these homologies are almost identical in man and apes, so are the lines produced in the skin by muscles. Modifications in the size of muscles have produced some variation in the direction of the lines, but not sufficient to obscure the general adherence to one plan. While the human hand has developed into a better grasping organ than that of an ape, and the foot into a more secure organ of support, both retain evidence of their fundamental unity of structure, and both are capable of performing the same kinds of movements, subject to certain modifications suited to the necessities of each case.

MAGGI, L. La Sutura Endomesognatica alla Superficie Facciale degli Intermaxillari nel *Semnopithecus entellus*. *Rend. Ist. Lombardo* (2) xxv, pp. 89 & 90, pl. i.

RUGE, G. Zeugnisse für die metamere Verkürzung des Rumpfes bei Säugethieren; Der Musculus Rectus Thoraco-abdominalis der Primaten. *Morph. JB.* xix, pp. 376-427, pls. xii & xiv.

An elaborate study of the relations of this muscle in a number of *Primates*, with an account of its morphological bearings.

STRUTHERS, J. The Articular Processes of the Vertebrae of the Gorilla compared with those in Man, and on Costo-Vertebral Variation in the Gorilla. *J. Anat. Phys.* xxvii, pp. 131-138.

TOPINARD, P. De l'Évolution des Molaires et des Prémolaires chez les *Primates*, et en particulier chez l'Homme. *L'Anthrop.* iii, pp. 641-710, figs.

An elaborate dissertation on the formation and homologies of the cusps and roots of the cheek-teeth of the *Primates*, with observations on the relation of these teeth to the tritubercular type. The author is of opinion that the theory of the direct descent of Man from Lemuroids cannot be sustained; and he inclines to the view that the *Hominidae* should be separated from the other Anthropoids to constitute a distinct suborder.

TUCKERMAN, F. The Gustatory Organs of *Ateles ater*. *J. Anat. Phys.* xxvi, pp. 391-393.

## A.—ANTHROPOIDEA.

## a. SIMIIDÆ.

† *Dryopithecus* : note on its femur ; POHLIG, SB. niederrhein. Ges. 1892, pp. 41–43.

*Hylobates hainanus*, n. sp., THOMAS, Ann. N. H. (6) ix, pp. 85 & 86, Hainan. Distinguished by absence of light frontal band.

† *Pliopithecus antiquus*, n. var. *chantrei*, DEPÉRET, Arch. Mus. Lyon, v, p. 9, pl. ii, fig. 14, Mt. Ceindre.

## b. CERCOPITHECIDÆ.

COLLETT, R. On a New Monkey from North-East Sumatra. P. Z. S. 1892, pp. 613–617, pl. xlii.

GAUDRY, C.R. cxiv, pp. 1236 & 1237, records the occurrence of fragmentary remains of a Monkey from a cavern in the Haute-Garonne.

*Macacus cynomolgus* : embryo described by KOLMANN, Anat. Anz. vii, pp. 335–341.

† *Macacus trarensis*, n. sp., POMEL, C.R. cxiv, pp. 157–160, Pleistocene, Algeria.

*Semnopithecus everetti*, n. sp., THOMAS, P. Z. S. 1892, p. 582, N. Borneo.

*Semnopithecus cruciger*, n. sp., THOMAS, Ann. N. H. (6) x, pp. 475–477, Borneo.

*Semnopithecus pyrrhus*, its distinctness from *S. maurus* ; JENTINK, Notes Leyd. Mus. xiv, pp. 119–121, pls. iii & iv.

*Semnopithecus thomasi*, n. sp., COLLETT, *op. cit.*, Sumatra.

*Semnopithecus nemus*, recorded by MEYER, P. Z. S. 1892, p. 665, from Hainan.

*Cercopithecus schmidtii*, n. sp., MATSCHIE, Zool. Anz. xv, p. 161, Uganda.

*Cercopithecus stairsi*, n. sp., SCLATER, P. Z. S. 1892, p. 580, pl. xl, Lower Zambesi.

*Cynocephalus lungheldi*, n. sp., MATSCHIE, SB. nat. Fr. 1892, p. 232, Ungaru, E. Africa.

## c. CEBIDÆ.

GERMAIN, H. Les Sapajous. Act. Soc. Chili, i, pp. 105–107

Notes on the habits of these Monkeys.

## B.—LEMUROIDEA.

NACHTRIEB, H. F. A New Lemur. Zool. Anz. xv, pp. 147 & 148.

A preliminary notice of a Lemur from the Philippines regarded as indicating a new species.

*Lemur menagensis*, n. sp., NACHTRIEB, loc. cit.

†*Necrolemur cartieri*, n. sp., L. RÜTIMEYER, Abh. Schw. pal. Ges. xviii, p. 114, Up. Eocene, Switzerland.

†*Pelycodus helveticus*, n. sp., RÜTIMEYER, t. c. p. 117, *ibid.*

†*Hyopsodus jurensis*, n. sp., RÜTIMEYER, t. c. p. 121, *ibid.*

## 2. CHIROPTERA.

ALLEN, H. On a New Subfamily of Phyllostome Bats. P. U. S. Nat. Mus. xv, pp. 437-439.

It is concluded that *Natalus* should be removed from the *Vespertilionidae* to form a subfamily of *Phyllostomatidae*.

—. On the Molars of the Pteropine Bats. P. Ac. Philad. 1892, pp. 172 & 173.

The author believes that he is able to identify the constituent cusps of these teeth with those of the quadritubercular type, in which case they cease to be aberrant.

BEAUREGARD, H. Le Canal Carotidien des Roussettes. C.B. Soc. Biol. 1892, pp. 914-916.

BOCAGE, J. V. B. DU. Observations sur les Espèces du Genre *Cynonycteris* rencontrées en Angola par M. d'Anchieta. J. Sci. Lisb. (2) vii, pp. 173-178, figs.

It is concluded that the species represented are probably *C. straminea*, *C. aegyptiaca*, and *C. collaris*.

LATASTE, F. Études sur la Faune Chilienne—Note sur les Chauves-Souris. Act. Soc. Chili, i, pp. 70-91.

The list includes 1 *Desmodus*, 1 *Sturnira*, 1 *Nyctinomus*, 3 *Vespertilio*, 2 *Atalapha*, and 4 *Vesperugo*.

QUELCH, J. J. The Bats of British Guiana. Timehri (2) vi, pp. 90-109.

Notes on the habits of the various species. It is stated that there are blood-sucking Bats in districts where *Desmodus* is unknown.

WINGE, H. Jordfnndne og nulevende Flagermus (*Chiroptera*) fra Lagoa Santa, Minas Geraes, Brasilien; nach Udsigt over Flagermusenes indtyrdes Scægtskab. E. Mus. Lund. vol. iii, pp. 1-65, pls. i & ii.

An important memoir on the Bats of Lagoa Santa, uniform with the one on the Rodents noticed in Zool. Rec. xxiv, *Mamm.* p. 32, but, unfortunately, in Danish. As in that case, the recent and fossil forms are taken together, and figures of the skulls and dentition of the majority given. No species are new; but a full account is given of the forgotten *Phyllostoma humerale*, Lund, now referred to *Stenoderma*. Numerous species, described more or less imperfectly by the same author, are assigned to their proper genera. It is proposed to alter the names of the Bats termed by Dobson *Lonchoglossa wiedi* and *Molossus temminckii* into



*L. ecaudata* and *L. histipes* respectively; but both these changes are inadmissible, according to the rules of nomenclature. Two appendices follow the systematic portion, the first containing an account of the author's investigations on the myology of Bats and his proposed classification, while the second deals with the work of other writers. This part appears to contain a number of valuable observations, and also comprises a complete series of dental formulæ, given in such a manner as to indicate what the author considers to be the homologies of the individual teeth throughout the order.

#### a. PTEROPODIDÆ.

*Cynopterus blanfordi*, n. sp., THOMAS, Ann. Mus. Genov. (2) x, p. 884 (1891), Karin Hills, Burma. See also t. c. p. 921, pl. xi.

#### b. RHINOLOPHIDÆ.

*Rhinolophus ferrum-equinum*: DE KERVILLE, Le Nat. 1891, p. 239, describes and photographs a colony hibernating in a cave in the department of Eure.

†*Rhinolophus lugdunensis et collongensis*, n. spp., DEPÉRET, Arch. Mus. Lyon, v, pp. 13 & 16, pl. ii, figs. 4-9, Miocene, Mt. Ceindre.

#### c. VESPERTILIONIDÆ.

BOLAM, G. Daubenton's Bat in Northumberland, with remarks upon other Species recorded from the district. Naturalist, 1892, pp. 269-272.

†*Vespertilio grivensis*, n. sp., DEPÉRET, Arch. Mus. Lyon, v, p. 11, pl. ii, figs. 2 & 3, Miocene, Grive-St-Alban.

*Rhogeessa alleni*, n. sp., THOMAS, Ann. N. H. (6) x, pp. 477 & 478, Mexico.

*Scotophilus temmincki*, regarded by H. ALLEN, P. U. S. Nat. Mus. xv, pp. 442 & 443, as nearly allied to *Atalapha* and *Dasypterus*.

*Atalapha brachyotis*, n. sp., J. A. ALLEN, Bull. Am. Mus. Nat. Hist. iv, pp. 47 & 48, Galapagos I.

*Nyctophilus walkeri*, n. sp., THOMAS, Ann. N. H. (6) x, pp. 405 & 406, Adelaide R., Australia.

*Harpiocephalus fœx*, n. sp., THOMAS, Ann. Mus. Genov. (2) x, p. 884 (1891), Karin Hills, Burma. See also t. c. p. 926.

*Natalus*, Gray, amended by Winge (*suprà*, p. 25), p. 38, to *Natalis*; transferred by Allen, *suprà*, to *Phyllostomatidæ*.

#### d. PHYLLOSTOMATIDÆ.

*Chilonycteris davyi*, n. var. *fulvus*, THOMAS, Ann. N. H. (6) p. 410, Mexico.

*Ectophylla alba*, n. g. & sp., H. ALLEN, P. U. S. Nat. Mus. xv, pp. 441 & 442, Honduras. Founded on a mutilated skin without skull.

*Artibeus*, Leach, amended by Winge (*suprà*, p. 25), p. 38, to *Artobius*.

*Artibeus harti*, n. sp., THOMAS, Ann. N. H. (6) ix, pp. 408-410, Trinidad.

### 3. INSECTIVORA.

#### a. TUPAIIDÆ.

*Tupaia everetti*, n. sp., THOMAS, Ann. N. H. (6) ix, pp. 250 & 251, Mindanao, Philippines.

*Tupaia picta*, n. sp., THOMAS, *t. c.* pp. 251 & 252, N. Borneo.

*Tupaia montana*, n. sp., THOMAS, *t. c.* p. 252, Mt. Dulit, N. Borneo. Also P. Z. S. 1892, p. 223.

*Tupaia melanura*, n. sp., THOMAS, *t. c.* pp. 252 & 253, *ibid.* Also P. Z. S. 1892, p. 224.

#### b. MACROSCOLIDIDÆ.

FILHOL, H. Note sur un Insectivore Nouveau. Bull. Soc. Philom. (8) iv, p. 134.

Describes and figures the hinder end of a mandibular ramus considered to be allied to the existing *Rhynchocyon*.

†*Pseudorhynchocyon cayluxi*, n. g. & sp., FILHOL, *l. c.*, Phosphorites, Caylux.

#### c. SORICIDÆ.

†*Sorex styriacus*, n. sp., HOFMANN, JB. geol. Reichsanst. xlii, p. 74, pl. iii, fig. 4, Miocene, Styria.

*Sorex oreopolus* et *saussurei*, n. spp., MERRIAM, P. Biol. Soc. Washington, vii, pp. 173 & 174, Mexico.

#### d. ERINACEIDÆ.

CARLIER, E. W. Contributions to the Histology of the Hedgehog (*Erinaceus europæus*). J. Anat. Phys. xxvii, pp. 85-111 & 169-178, pls. iv-vi & xi.

The first part deals with the alimentary canal, the second with the liver, and the third with the skin. The spines are shown to be the morphological equivalents of hairs.

#### e. CENTETIDÆ.

THOMAS, O. On the Insectivorous Genus *Echinops*, Martin, with Notes on the Dentition of the Allied Genera. P. Z. S. 1892, pp. 500-505.

After noticing in detail the leading dental and other characteristics of

*Echinops*, the author shows that the adult dentition of *Centetes* exhibits the Marsupial feature of having four molars. It is suggested that the presumed affinity between *Solenodon* and *Centetes* is merely due to the feature of trituberculism in the molar dentition.

*Echinops telfuiri*, n. var. *palescens*, THOMAS, t. c. p. 501, S. Madagascar.

#### 4. CARNIVORA.

##### A.—CARNIVORA VERA.

ALLEN, H. On the Cephalo humeral Muscle, and the so-called rudimentary Clavicle of *Carnivora*. P. Ac. Philad. 1892, p. 217.

Suggests that the ossification met with in the muscles of the shoulder of *Carnivores* is not really a representative of the clavicle.

GREVÉ, C. Die Geographische Verbreitung der Bärenartigen. Zool. Jahrb. Abth. f. Syst. vi, pp. 588–616, pl. xxvii.

The geographical distribution of the various species of *Ursidae*, *Procyonidae*, *Arctictis*, *Cerculeptes*, &c.

PETRINI, —. Note sur la Présence de Corpuscules de Pacini et de Ganglions Nerveux dans le Pancréas du Chat. CR. Soc. Biol. 1892, pp. 275 & 276.

SCHACHT, H. Die Raubsäugethiere des Teutoburger Walder. VIII, Der Fischotter (*Lutra vulgaris*); IX, Der Dachs (*Meles taxus*). Zool. Gart. xxxiii, pp. 41–48.

RUFFINI, A. Sur un Réticule Nerveux Spécial, et sur quelques Corpuscules de Pacini qui se trouvent en connexion avec les Organes Musculo-tendineux du Chat. Arch. Ital. Biol. xvii, pp. 101–106.

##### a. FELIDÆ.

FABRINI, E. Su alcuni Felini del Pliocene Italiano. Atti [Mem. Rend.] Acc. Rom. (5) i, pp. 257–263.

Preliminary notes on Pliocene Feline remains in the Museum at Florence.

†*Felis hillianus* [a], n. sp., COPE, Am. Nat. xxvi, p. 1029, Pliocene, Texas. *Caracal berberorum*, n. sp., MATSCHIE, SB. nat. Fr. 1892, p. 114, N. Africa.

†*Pseudalurus transitorius*, n. sp., DÉPERET, Arch. Mus. Lyon, v, p. 21, pl. i, figs. 5 & 6, Miocene, Grive-St-Alban.

##### b. VIVERRIDÆ.

LYDEKKER, R. On the Occurrence of the so-called *Viverra hastingia* of Hordwell in the French Phosphorites. Q. J. Geol. Soc. xlviii, pp. 373 & 374, fig.

It is shown that *Viverra hastingia*, Davies, is common to the Oligocene

of France and Hordwell, and since there is no character by which the lower jaw of the type of the latter can be satisfactorily distinguished from the type of *V. angustidens*, Filhol, it is considered that *V. hastingsia* is specifically inseparable from *V. angustidens*. Hence the cranium, which is the subject of the communication, is figured under the latter and earlier name. There is added a list of 7 Mammals known to be common to the Headon Beds of Hordwell and the Isle of Wight, and the French phosphorites.

*Genetta vulgaris*, recorded by DE KERVILLE, Bull. Soc. Rouen, 1890, pp. 79 & 80, from the Department of the Eure.

†*Progenetta*, n. g., DÉPERET, Arch. Mus. Lyon, v, p. 34, pl. i, fig. 3; type, *Mustela incerta*, Lartet.

*Linsang*, adopted by THOMAS, Ann. Mus. Genov. (2) x, p. 9, in place of *Prionodon*; the latter being preoccupied by *Priodon*.

*Hemigale hosei*, n. sp., THOMAS, Ann. N. H. (6) ix, p. 250, and P. Z. S. 1892, p. 222, pl. xviii, Mt. Dulit, Borneo.

### c. HYÆNIDÆ.

†*Borophagus diversidens*, n. g. & sp., COPE, Am. Nat. xxvi, p. 1029, Pliocene, Texas.

### d. CANIDÆ.

KULAGIN, N. Mittheilung über die Hunderasse Laika (Eskimo-hunde) in Russland. Zool. Jahrb. Abth. f. Syst. vi, pp. 435-441, pl. xx.

LANGKAVEL, B. Ueber Dingos, Pariah- und Neuseeländische Hunde. Zool. Gart. xxxiii, pp. 33-38.

—. Der Polarfuchs (*Canis lagopus*). T. c. pp. 79-88 & 111-119.

SCHÄFF, E. Ueber den Schädel von *Canis adustus*, Sund. Zool. Jahrb. Abth. f. Syst. vi, pp. 522-531, pl. xxv.

A comparison of the skull of this Jackal with those of other species.

WHITE, T. On the Native Dog of New Zealand. Tr. N. Z. Inst. xxiv, pp. 540-557.

### e. URSIDÆ.

COOKE, J. H. On the occurrence of *Ursus arctos* in the Malta Pleistocene. Med. Nat. ii, pp. 267-269.

*Hyenarctus brevirohinus*, HOFMANN, JB. geol. Reichsanst. xlii, p. 64, pl. ii, figs. 1-3, = *Cephalogale brevirohinus*, Hofmann [Zool. Rec. xxiv, Mamm. p. 25], = *Hyenarctus minutus*, Koken [Zool. Rec. xxv, Mamm. p. 31].

## f. MUSTELIDÆ.

HARTING, J. E. The British Marten (*Martes sylvatica*, Nilsson). Zool. (3) xv, pp. 450-459 (1891), and xvi, pp. 131-138.

An account of its distribution and habits in the British Islands.

†*Martes delphinensis*, n. sp., DEPÈRET, Arch. Mus. Lyon, v, p. 26, pl. i, fig. 10, Miocene, Grive-St-Alban.

†*Mustela incerta*, Lartet, referred by Depèret to *Viverridæ* (*vide supra*).

†*Canimartes cumminsi*, n. g. & sp., COPE, Am. Nat. xxvi, p. 1029, Pliocene, Texas.

## B.—PINNIPEDIA.

ABBOTT, W. J. L. On the occurrence of Walrus in the Thames Valley. P. Geol. Assoc. xii, p. 357.

BOUVIER, E. L. Plexus formés par les Artères Intercostales du *Phoca vitulina*. Bull. Soc. Philom. (8) v, pp. 81-84.

FORBES, H. O. On some points in the Anatomy of a Sea Bear caught off Sumner, Canterbury, New Zealand; with notes on the New Zealand Eared Seals. Tr. N. Z. Inst. xxiv, pp. 198-200.

A preliminary paper dealing with some points in the anatomy of *Arctocephalus forsteri*. The author objects to the division of the *Otariidæ* into *Otaria* and *Arctocephalus*; and he would subdivide the latter into *Eumetopias* (Hair-seals, or Sea-lions), and *Arctocephalus* proper (Fur-seals, or Sea-bears). In the New Zealand region he recognizes *Eu. hookeri* (Auckland Island Hair-seal), and *A. forsteri*, of which *Otaria cinerea* is the female. The skins described by J. W. Clarke as *Otaria cinerea*, Péron, are referred to *A. forsteri*; being those of Fur-seals. Péron's name must be dropped. *Eu. hookeri* appears to be confined to the Auckland Isles; while *A. forsteri* is common to New Zealand, Chatham Island, and the Seal-Rocks, near Port Stephens, New South Wales.

## g. OTARIIDÆ.

†*Callotaria*, n. nom., PALMER, P. Biol. Soc. Washington, vii, p. 156; to replace *Callorhinus*, Gray (preoccupied).

## †C.—CREODONTA.

FILHOL, H. Note sur le *Quercitherium tenebrosus*. Bull. Soc. Philom. (8) iv, pp. 135-137.

Describes and figures the upper and lower dentition of this remarkable Creodont from the Phosphorites.

OSBORN, Bull. Am. Mus. Nat. Hist. iv, pp. 103-118, gives a synopsis of the Wahsatch forms, which are divided into *Palæonictidæ*, *Oxyænidæ*, *Provicerridæ*, *Miacidæ*, *Mesonychidæ*, and *Arctocytonidæ*. *Oxyæna* is shown to have  $\frac{3}{2}$  incisors.

SCOTT, W. B. A Revision of the North American *Creodonta*, with notes on some Genera which have been referred to that Group. P. Ac. Philad. 1892, pp. 291-323.

The group is divided into the families *Oxycænidæ*, *Arctocytonidæ*, *Triisodontidæ*, *Mesonychidæ*, *Provicerridæ* (= *Leptictidæ*, in part), *Palæonyctidæ* (= *Ambloctynidæ*), *Hyænodontidæ* (= *Oxyænidæ*), and *Miacidæ*, each of which is fuller defined. Then follows a classified synopsis of the genera, among which several are new (*vide infra*).

#### h. OXYCÆNIDÆ.

- †*Protochriacus*, n. g., SCOTT, P. Ac. Philad. 1892, p. 296 ; type, *Chriacus priscus*, Cope.
- †*Epichriacus*, n. g., SCOTT, l. c. ; type, *Chriacus schlosserianus*, Cope.
- †*Pentacodon*, n. g., SCOTT, l. c. ; type, *Chriacus inversus*, Cope.
- †*Ellipsodon*, n. g., SCOTT, l. c. p. 298 ; type, *Tricentes inæquidens*, Cope.

#### i. †ARCTOCTONIDÆ.

- †*Ailurarus picteti*, n. g. & sp., L. RÜTIMEYER, Abh. Schw. pal. Ges. xviii, p. 97, Up. Eocene, Switzerland.
- †*Clanodon*, n. g., SCOTT, *op. cit.* p. 298 ; type, *Miocænus ferox*, Cope.
- †*Tetraclænodon*, n. g., SCOTT, l. c. p. 299 ; type, *Miocænus floverianus*, Cope.

#### j. †TRIISODONTIDÆ.

- †*Microclænodon*, n. g., SCOTT, l. c. p. 302 ; type, *Triisodon assurgens*, Cope.

#### k. †MESONYCHIDÆ.

- †*Dissacus leptognathus*, n. sp., OSBORN, Bull. Am. Mus. Nat. Hist. iv, p. 112, Eocene, Wahsatch Beds.
- †*Pachyæna gigantea*, n. sp., OSBORN, l. c., pp. 113 & 114, *ibid.*

#### l. †PROVIVERRIDÆ.

- †*Prothyæna egerkingiæ*, n. sp., RÜTIMEYER, Abh. Schw. pal. Ges. xviii, p. 105, Up. Eocene, Switzerland.

## m. †PALEONYCTIDÆ.

WORTMAN, Bull. Am. Mus. Nat. Hist. iv, pp. 95-103, points out how the dentition of *Palæonictis* and *Patriofelis* shows a transition towards that of the *Felidæ*, the upper p. 4 and the lower m. 1 developing into carnassials. *Ambloctonus* is included in the family, of which a diagnosis is given by OSBORN, *t. c.* p. 104.

†*Patriofelis leidyani* [a] n. sp., WORTMAN, *t. c.* p. 98, Eocene, Wahsatch Beds.

†*Palæonictis occidentalis*, n. sp., OSBORN, *t. c.* p. 104, *ibid.*

## n. †HYÆNODONTIDÆ.

†*Hyænodon schlosseri*, n. sp., RÜTIMEYER, Abh. Schw. pal. Ges. xviii, p. 101, Up. Eocene, Switzerland.

†*Pterodon magnus*, n. sp., RÜTIMEYER, *t. c.*, p. 99, *ibid.*

## INCEPTE SEDIS.

†*Protagonodon*, n. g., SCOTT, *op. cit.* p. 322: type, *Miocænus pentacus*, Cope.

†*Paradoxodon*, n. g., SCOTT, *l. c.*; type, *Chriacus rustimeyeranus*, Cope.

†*Carcinodon*, n. g., SCOTT, *t. c.*, p. 323; type, *Miocænus filholianus*, Cope.

## 5.—RODENTIA.

BEDDARD, F. E. On the Convolution of the Cerebral Hemispheres of certain Rodents. P. Z. S. 1892, pp. 596-613, figs.

This paper refers chiefly to *Dasyprocta*, *Calogenys*, *Lagostomus*, *Hydrochærus*, and *Dolichotis*, being the genera of Rodents in which the brains show the greatest development of convolutions. The author illustrates the form of the convolutions in these and other genera, and discusses the bearing of his observations upon classification.

CANNIEU, A. Recherches sur l'Appareil Reproducteur Male du *Cavia*. Rev. Sci. Nat. Ouest. ii, pp. 55-63, and figs. [incomplete].

DUVAL, M. Le Placenta des Rongeurs et l'Inversion des Feuilleta Blastodermiques. T. c. pp. 917-919.

—. Le Placenta des Rongeurs. J. de l'Anat. Phys. xxviii, pp. 58-98 & 333-453, pls. iii-v, xvi, & xvii.

The completion of the memoir, of which the earlier portions have already been recorded.

FISERIUŠ, E. Beiträge zur Entwicklungsgeschichte von *Sciurus vulgaris*. Verh. Ges. Wurzb. xxvi, pp. 103-122, pl. ii.

An epitome of the developmental history of this species.

FLEISCHMANN, A. Die einheitliche Plan der Placentarbildung bei Nagethieren. SB. Ak. Berlin, 1892, pp. 445-457, pl. ii.

It is concluded that the view of Ryder that the discoidal placenta of the Rodents is derived from the diminution of a zonary one, is well supported.

FREUND, P. Beiträge zur Entwicklungsgeschichte der Zahnanlagen bei Nagethieren. Arch. mikr. Anat. xxix, pp. 525-555, 2 pls.

Confirms previous observations as to the presence in *Lepus* of a rudimentary tooth in each jaw in front of the large incisor, which is regarded as a much-reduced deciduous predecessor of the latter. In the upper diastema of *Lepus* there is a distinct dental ridge, without enamel-germs; but the latter occur in *Sciurus*. It is concluded that the *Duplicidentata* present a very old type of the order, next to which comes the *Sciuro-morpha*. The view that Rodents are directly descended from Marsupials is supported. The memoir is translated in Ann. N. H. (6) xi, pp. 301-327 (1893).

GILIS, P. Note sur un Muscle Costo-Basilaire chez le Cochon d'Inde. CR. Soc. Biol. 1892, p. 1018.

POUSARGUES, E. DE. Note sur l'Appareil Génital Mâle du Cochon d'Inde (*Cavia cobaya*). Bull. Soc. Philom. (8) v, pp. 45-48.

ROBINSON, A. Some Points in the Early Development of *Mus musculus* and *Mus decumanus*; the Relation of the Yolk-sac to the Decidua and Placenta. Rep. Brit. Ass. 1891, pp. 690 & 691.

— Observations upon the Development of the Spinal Cord in *Mus musculus* and *Mus decumanus*; the Formation of the Septa and Fissures. T. c. pp. 691 & 692.

#### a. SCIURIDÆ.

STEPHENS, F. Notes on *Sciurus fossor*, Peale. Zoe, iii, pp. 118 & 119.

The author thinks it probable that the name *S. leporinus* will eventually have to be adopted for this Carolina Squirrel.

*Sciurus brookei*, n. sp., THOMAS, Ann. N. H. (6) ix, p. 253, and P. Z. S. 1892, p. 225, Mt. Dulit, N. Borneo.

*Sciurus lowi*, n. sp., THOMAS, t. c. p. 253, Lumbidan.

*Sciurus pryri* and *hosei*, n. spp., THOMAS, op. cit. x, pp. 214 & 215, N. Borneo.

*Sciurus undulatus*, n. sp., TRUE, P. U. S. Nat. Mus. xv, pp. 465-467, E. Africa.

*Sciurus getulus*: POMEL, C.B. cxiv, pp. 53 & 54, has a note on this almost unknown African species.

*Xerospermophilus*, n. subg., MERRIAM, P. Biol. Soc. Washington, vii, p. 27; type, *Spermophilus mohavensis*.



*Ammospermophilus*, n. subg., MERRIAM, *l. c.* ; type, *S. leucurus*.

*Arctomys caudatus* : notes on its distribution by BÜCHNER, *Mél. biol.* xiii, pp. 309–324, where it is shown that this species has a wide range in Central Asia, extending to regions north of the Altai.

*Cynomys mexicanus*, n. sp., MERRIAM, *op. cit.* p. 157, Mexico.

†*Plesiartomys schlosseri*, n. sp., RÜTIMEYER, *Abh. Schw. pal. Ges.* xviii, p. 89, Up. Eocene, Switzerland.

### b. CASTORIDÆ.

MARTIN, H. T. *Castorologia : the History and Traditions of the Canadian Beaver.* London & Montreal : 1892, 8vo, 238 pp., illus.

Describes the Beaver from the historical, zoological, distributional, and commercial aspects ; with notices of other American Rodents, recent and fossil.

NEWTON, E. T. On a Skull of *Trogontherium cuvieri* from the Forest-bed of East Runton, near Cromer. *T. Z. S.* xiii, pp. 165–175, pl. xix.

The complete memoir, of which the abstract is quoted in *Zool. Rec.* xxviii, *Mamm.* p. 30.

### c. MURIDÆ.

HARTING, J. E. Plague of Field Voles in the South of Scotland. *Zool.* (3) xvi, pp. 161–173.

JENTINK, F. A. On a New Species of Rat from the Island of Flores. In Weber's *Zool. Ergebnisse einer Reise in Niederländisch Ost-Indien*, ii, pp. 78–83, pl. iii.

The species in question is the largest Rat yet known. The Indian *Mus setifer* is referred to *Nesocia*, which is regarded as a subgenus of *Mus* (*vide infra*).

*Gerbillus calurus*, hab. unknown, *G. gracilis*, Gambia, and *G. emini*, Wadelai, n. spp., THOMAS, *Ann. N. H.* (6) ix, pp. 76–79.

*Meriones tristrami*, n. sp., THOMAS, *t. c.* p. 148, Palestine.

*Dendromys nigrifrons*, n. sp., TRUE, *P. U. S. Nat. Mus.* xv, pp. 462–464, E. Africa.

*Steatomys bocagei*, n. sp., THOMAS, *Ann. N. H.* (6) x, p. 264, Angola. It is also noted that the proper name of *S. edulis* is *S. pratensis*.

*Rhithrodontomys*, Giglioli, 1873, should replace *Ochetodon*, COUES, 1874 ; MERRIAM, *P. Biol. Soc. Washington*, vii, p. 26.

*Sitomys*, Fitzinger, should replace the untenable *Hesperomys* ; MERRIAM, *t. c.* p. 27.

*Sitomys musculus*, n. sp., MERRIAM, *t. c.* p. 170, Mexico.

*Oryzomys bauri*, n. sp., J. A. ALLEN, *Bull. Am. Mus. Nat. Hist.* iv, pp. 48–50, Galapagos I.

- Neotoma alleni* and *tenuicauda*, n. spp., MERRIAM, P. Biol. Soc. Washington, vii, pp. 168-170, Mexico.
- Xenomys nelsoni*, n. g. & sp., MERRIAM, t. c. pp. 159-163, Mexico.
- Arricola phæus*, n. sp., MERRIAM, t. c. pp. 171 & 172, Mexico.
- † *Bramus barbarus*, n. g. & sp., POMEL, C.B. cxiv, pp. 1159-1163, Pleistocene, Tunis. Allied to *Microtus*.
- Isonys pumilio*, n. varr. *diminutus* and *bechuana*, THOMAS, P. Z. S. 1892, pp. 551 & 552, Masailand and Bechuanaland.
- Mus chiropus*, n. sp., THOMAS, Ann. Mus. Genov. (2) x, p. 889 (1891), Karin Hills, Burma. See also t. c. p. 935, pl. xi.
- Mus* (*Dasymys*) *bentleyæ*, p. 179, Lower Congo, *M. dalloni*, p. 181, W. Africa, *M. burtoni*, pp. 182 & 183, Ashanti, n. spp., THOMAS, Ann. N. H. (6) x.
- Mus aquilus*, n. sp., TRUE, P. U. S. Nat. Mus. xv, pp. 460-462.
- Mus armandvillei*, n. sp., JENTINK, op. cit., Flores.
- Acomys wilsoni*, n. sp., THOMAS, Ann. N. H. (6) x, p. 22, Mombasa.
- Conilurus*, W. Ogilby, 1838, adopted by J. D. OGILBY, Cat. Australian Mammals (*suprà*, p. 12), p. 113, for *Haplotis*, Licht, preoccupied.
- Pithechir melanurus*, JENTINK, Notes Leyd. Mus. xiv, pp. 122-126, pls. iii & iv, gives a description of this rare red-coloured Rat from Java.
- † *Trilophomys*, n. g., DEPÉRET, Mém. Soc. Géol.-Pal. iii, p. 121; to replace *Lophiomys*, Dep. [Zool. Rec. xxvii, *Mamm.* p. 37], preoccupied.

#### d. SPALACIDÆ.

- Spalax typhlus*, recorded by ANDERSON, P. Z. S. 1892, pp. 472-476, from Egypt, with notes on its habits.

#### e. GEOMYIDÆ.

- Geomys nelsoni*, *formosus*, and *gymnurus*, n. spp., MERRIAM, B. Biol. Soc. Washington, vii, pp. 164-167, Mexico. (The first of these is apparently identical with the undermentioned species, which has the priority.—R. L.)
- Geomys bulleri*, n. sp., THOMAS, Ann. N. H. (6) x, p. 196, Jalisco, Mexico.
- Perodipus*, FITZINGER, SB. Ak. Wien. 1867, p. 126, is stated by MERRIAM, P. Biol. Soc. Washington, vii, p. 26, to be the proper name of the genus termed *Dipodops* by Merriam, 1890 [see Zool. Rec. xxvii, *Mamm.* p. 37].
- Perognathus merriami*, n. sp., J. A. ALLEN, Bull. Am. Mus. Nat. Hist. iv, pp. 45 & 46, pl. iii, S.E. Texas.

#### f. DIPODIDÆ.

- Sminthus concolor*, n. sp., BÜCHNER, Mém. biol. xiii, pp. 268-271, Kansu, China.

## g. OCTODONTIDÆ.

BEDDARD, F. E. On the Brain and Muscular Anatomy of *Aulacodus*. P. Z. S. 1892, pp. 520-527, figs.

Describes the anatomy of the muscles and brain in detail, and that of the viscera more briefly; with figures of the hard palate and the brain.

†*Capromys columbianus*, n. sp., CHAPMAN, Bull. Am. Mus. Nat. Hist. iv, pp. 314 & 315, Subfossil, Cuba.

## h. LEPORIDÆ.

CHRISTY, M. On the Extermination of the Rabbit in Australasia. Zool. (3) xvi, pp. 377-388.

In the course of this article the author alludes to the remarkable variation in the numbers of *Lepus americanus* in the north-west of Canada; the animals being apparently attacked by an epidemic.

LATASTE, F. À propos de Lapins Domestiques Vivant en Liberté dans l'Îlot de l'Étang de Cauquenes (Colchagua). Act. Soc. Chili, ii, pp. 210-222.

The author discusses the bearings of this case in regard to feral Rabbits in general. He concludes that domestic Rabbits run wild, never revert to the original wild race, nor do they ever form a new species. Generally such feral Rabbits tend to lose individual variations, and to form a more or less uniform race.

*Lepus cuniculus*: a wild Albino recorded by DE KERVILLE, Bull. Soc. Rouen, 1891, pp. 61 & 62. For formula of milk-dentition, see Woodward, *infra*, p.

*Lepus sinensis*, n. var. *coreanus*, THOMAS, Ann. N. H. (6) ix, pp. 146 & 147, Corea.

## 6.—UNGULATA.

TAEKER, J. Zur Kenntniss der Ontogenese bei Ungulaten. Dorpat: 1892, 8vo, 27 pp., 4 pls.

An elaborate treatise on the mode of formation and development of the cheek-teeth of the Ungulates. The forms described are the Horse, the Pig, *Dorcatherium*, the Elk, the Roe, the Sheep, and the Ox. It is concluded that all selenodont types show an initial bunodont condition. In all forms cones are first developed on the crowns of the molars, which in the bunodont types tend to assume a pyramidal form, and unite with one another at their bases; while in the selenodonts they take a crescent shape. The accessory column and cingulum in the latter are of secondary origin. The more complicated types of selenodont molars result from

additions of new elements to the original cones, such additions being added in the upper molars to the paracone, and not, as has been supposed, to the protocone. In selenodonts it is the antero-external cone which first makes its appearance, and it is accordingly urged that this, instead of the inner cone, ought to be called the protocone.

#### A.—PROBOSCIDEA.

HICKS, H. On the Discovery of Mammoth and other Remains in Endsleigh Street, &c. Q. J. Geol. Soc. xlviii, pp. 453-467.

It is concluded that the Mammoth lived very early in the Glacial period.

HOWORTH, SIR H. H. The Mammoth and the Glacial Drift. Geol. Mag. (3) ix, pp. 250-258 & 396-405.

The author endeavours to prove that the Mammoth is of pre- rather than post-glacial age.

MARTIN, K. Mammuthreste aus Niederland. JB. Mineral. 1892, i, pp. 45-48.

MÖBIUS, K. Die Behaarung des Mammuths und der Lebenden Elephanten, vergleichend untersucht. SB. Ak. Berlin, 1892, pp. 527-538, pl. iii.

Records the existence in living Elephants of a remnant of the woolly coat of the Mammoth.

POHLIG, H. Monographie des *Elephas antiquus*; Nachträge zur Dentition des *Elephas antiquus*. N. Acta Ac. L.-C. Nat. cur. lviii, pp. 260-466, pls. and text, figs.

The completion of the monograph quoted in Zool. Rec. xxv, *Mamm.* p. 43.

STEFANESCU, G. On the Existence of the *Dinotherium* in Roumania. Bull. Geol. Soc. Am. iii, pp. 81-83.

†*Mastodon longirostris* from Lahr, ECK, JB. Mineral, 1892, i, p. 151.

†*Mastodon successor*, n. sp., COPE, P. Ac. Philad. 1892, p. 227, Up. Tertiary, Texas.

†*Mastodon giganteus*, restored by MARSH, Am. J. Sci. (3) xlv, p. 350, pl. viii.

#### B.—†AMBLYPODA.

##### a. †COREPHODONTIDÆ.

OSBORN, Bull. Am. Mus. Nat. Hist. iv, pp. 120-122, shows that while the fore-foot was of the semi-digitigrade type of the Elephant, the pes was truly plantigrade.

EARLE, C. Revision of the Species of *Coryphodon*. Bull. Am. Mus. Nat. Hist. iv, pp. 149-166, figs.

It is concluded that *Bathmodon* and *Metalophodon* are synonyms of *Coryphodon*, and that there are 8 American species of the latter, together with 1 each of *Manteodon* and *Ectacodon*. The cusps of the molars are homologized with those of other Ungulates.

### C.—HYRACOIDEA.

#### b. PROCAVIIDÆ.

THOMAS, O. On the Species of the *Hyracoidea*. P. Z. S. 1892, pp. 50-76, pl. iii.

After a careful revision of all the known species, it is concluded that it appears impossible to refer the Hyraces to more than a single genus, for which the name *Procavia* is adopted. 14 species (one of which is new), and 4 varieties are recognized, so far as available material admits of forming a final conclusion. These species are defined, and their distribution described, with the aid of a map. The skull of *P. pallida* is figured.

WOODWARD, M. F. On the Milk-Dentition of *Procavia (Hyrax) capensis* and of the Rabbit, with remarks on the relation of the Milk and Permanent Dentitions of the *Mammalia*. T. c. pp. 38-49, pl. ii.

It is concluded that in the *Hyrax* the milk-dentition is  $i \frac{2}{2}$ ,  $c \frac{1}{1}$ ,  $mm \frac{4}{2}$ , and the permanent  $i \frac{2}{2}$ ,  $c \frac{0}{0}$ ,  $p \frac{4}{2}$ ,  $m \frac{2}{2}$ . The upper milk-canine may, however, sometimes be retained in the permanent series. In the Rabbit the formula of the milk-teeth is found to be  $i \frac{2}{2}$ ,  $mm \frac{2}{2}$ . The common Hare and the Rabbit are the only known Rodents with deciduous incisors, while the Rabbit is peculiar in having milk-predecessors to both incisors.

*Procavia latastei*, n. sp., THOMAS, t. c. p. 69, Senegal.

*Procavia stuhlmanni*, n. sp., MATSCHIE, SB. nat. Fr. 1892, pp. 110-112, Victoria Nyanza.

*Dendrohyrax validus*: skull figured by TRUE, P. U. S. Nat. Mus. xv, pl. lxxv.

### D.—+CONDYLARTHRA.

MARSH, O. C. A New Order of Extinct Eocene Mammals. Am. J. Sci. (3) xliii, pp. 445-449, figs.

Regards *Meniscotherium* and a form described as *Hyracops* as indicating a new order, allied to the *Hyracoidea*, but presenting very generalized features in the dentition and feet; the digits terminating neither in claws nor in hoofs. From this character the name *Mesodactyla* is proposed. The paper is criticized by COPE, Am. Nat. xxvi, pp. 411 &

412, who doubts whether *Hyracops* is distinct from *Meniscotherium*, and confirms his previous reference of the latter to the *Condylarthra*.

OSBORN, H. F. Is *Meniscotherium* a Member of the *Chalicotheroidea*?  
Am. Nat. xxvi, pp. 507-509, figs.

The question is provisionally answered in the affirmative; *Meniscotherium* being perhaps the ancestor of *Chalicotherium*.

### c. †PHENACODONTIDÆ.

†*Meniscodon picteti*, n. sp., RÜTIMEYER, Abh. Schw. pal. Ges. xviii, p. 10, Up. Eocene, Switzerland. The Genus *Meniscodon*, Rüt., dates from 1888, but is quoted in Zool. Rec. xxv, Mamm. p. 45, as being a misprint for *Meniscotherium*.

### d. †MENISCOTHERIIDÆ.

†*Hyracops socialis*, n. g. & sp., MARSH, Am. J. Sci. (3) xliii, pp. 446 & 447, Low. Eocene, New Mexico.

## E.—PERISSODACTYLA.

The following classification is proposed by OSBORN, Bull. Am. Mus. Nat. Hist. iv, p. 92:—

Buno-selenodont.	<i>Titanotheriidae</i> . .	<i>Palæosyopinae</i> . .	<i>Palæosyops</i> .
		<i>Titanotheriinae</i> . .	<i>Titanotherium</i> .
Lopho-selenodont.	<i>Equidae</i> . . . . .	<i>Hyracotheriinae</i> . .	<i>Hyracotherium</i> .
		<i>Anchitheriinae</i> . .	<i>Anchitherium</i> .
		<i>Equinae</i> . . . . .	<i>Equus</i> .
Sub-lophodont . . .	<i>Tapiridae</i> . . . . .	<i>Systemodontinae</i> . .	<i>Systemodon</i> .
		<i>Tapirinae</i> . . . . .	<i>Tapirus</i> .
Transitional . . . .	<i>Helaletidae</i> . . . . .		<i>Helaletes</i> .
	<i>Lophiodontidae</i> . .		<i>Lophiodon</i> .
Lophodont . . . . .	<i>Hyracodontidae</i> . .	<i>Hyrachyinae</i> . . . .	<i>Hyrachyus</i> .
		<i>Hyracodontinae</i> . .	<i>Hyracodon</i> .
		<i>Triplopodinae</i> . . .	<i>Triplopus</i> .
	<i>Amynodontidae</i> . .		<i>Amynodon</i> .
	<i>Rhinocerotidae</i> . .	<i>Aceratheriinae</i> . .	<i>Aceratherium</i> .
		<i>Diceratheriinae</i> . .	<i>Diceratherium</i> .
		<i>Rhinocerotinae</i> . .	<i>Rhinoceros</i> .
		<i>Elasmotheriinae</i> . .	<i>Elasmotherium</i> .

*Systemodon* is regarded as an ancestral Tapir (t. c. p. 124), and is distinguished from *Hyracotherium* and the equine line by the approximation of the first lower premolar to the canine.

## e. †LOPHIODONTIDÆ.

OSBORN, *Am. Nat.* xxiv, pp. 763-765, considers that the European forms included under the genus *Lophiodon* are really referable to three distinct families. The more typical forms, which might be retained in *Lophiodon*, have no representatives in America, but the others seem allied to transatlantic types, as indicated in the following table :—

*L. isselensis, parisiensis,* } = *Lophiodon* — *Lophiodontidæ*.  
*tapiroides.*

*L. annectans* = *Isectolophus* — *Tapiridæ*.

*L. cartieri* = *Hyrachyus* — *Hyracodontidæ*.

*L. rhinoceroïdes* = *Amyrnodon* — *Rhinocerotidæ*.

†*Lophiodon annectans*, n. sp., RÜTIMEYER, *Abh. Schw. pal. Ges.* xviii, p. 34, Up. Eocene, Switzerland.

†*Propalæotherium minutum*, n. sp., RÜTIMEYER, *t. c.* p. 35, *ibid.*

## f. EQUIDÆ.

CIACCIO, G. V. Sur une Étrange et Remarquable Particularité de Structure observée dans le Cornée d'un Cheval. *Arch. Ital. Biol.* xvii, pp. 295-297.

COPE, E. D. On the Permanent and Temporary Dentitions of certain Three-toed Horses. *Am. Nat.* xxvi, pp. 942-944, pls. xxv & xxvi.

The changes in the upper molars of *Protohippus placidus* are pointed out ; in the early state the dentition is that of *Hippotherium*, and it is not till middle life that the protocone fuses with the paracone to form the typical *Protohippus* molar. It is added that in all the group the milk-dentition is much simpler than the permanent one ; the milk-molars approximating to the permanent molars of *Anchitherium*.

MARSH, O. C. Recent Polydactyle Horses. *Am. J. Sci.* (3) xliii, pp. 339-354, figs.

Describes and figures feet of several existing Horses having super-numerary digits, which are regarded as indicating reversion to primitive polydactyle forms. A general survey of the extinct North American Perissodactyles allied to the Horse is appended, with illustrations of the foot-structure. In the course of this the new name *Hippops* is suggested for the undiscovered pentadactyle ancestor of the Horse ; and it is also stated that *Phenacodus*, Cope, should be replaced by the earlier *Helohyus*, Marsh. Criticized by COPE, *Am. Nat.* xxvi, pp. 410 & 411, who states that *Helohyus* was never defined.

POMMEROL, F. Sur un Petit Cheval Quaternaire trouvé dans la Limagne. *C.R. Ass. Fr. Sci.* xix, pt. 2, pp. 567-573, figs.

A replica of the paper quoted in *Zool. Rec.* xxvii, *Mamm.* p. 41.

SCHÖNLAND, S., *Nature*, xlv, pp. 6 & 7, confirms the statement as to the coloration of the Zebra being indistinguishable in moonlight from surrounding objects, and adds that it is likewise protective in daylight.

TROUSSART, E. L. The Fiction of the American Horse, and the Truth on this Disputed Point. *Science*, xx, pp. 128 & 129.

It is concluded that the statement as to the occurrence of Horses in La Plata at the time of the discovery of the New World is unfounded. Some observations are added on fossil species.

VAUGHAN, T. *Strangeway's Veterinary Anatomy*. 4th edition. Edinburgh: 1892, 8vo, 601 pp., illustrated.

†*Equus simplicidens*, n. sp., COPE, P. *Am. Phil. Soc.* 1892, p. 124, Pliocene (?), Texas.

*Equus boehmi*, n. sp., MATSCHIE, SB. *nat. Fr.* 1892, p. 131, German East Africa.

#### g. †PALÆOTHERIIDÆ.

†*Palæotherium magnum*, n. sp., RÜTIMEYER, *Abh. Schw. pal. Ges.* xviii, p. 19, Up. Eocene, Switzerland.

#### h. RHINOCEROTIDÆ.

LYDEKKER, R. Notes on Rhinoceroses, Ancient and Modern. *Field*, lxxix, p. 903, & lxxx, p. 38.

*Rhinoceros sinus*, note on by H. A. BRYDEN, *ibid.* lxxx, p. 84.

PAVLOW, (MADAME) M. Les *Rhinocérider* de la Russie, et le Développement des *Rhinocérider* en général. *Bull. Mosc.* 1892, pp. 137-221, pls. ii-v.

After recording the occurrence of the Russian representatives of the family, the author enters into a long discussion as to the mutual relationships of the various species of *Rhinoceros*, *Aceratherium*, etc.; her views as to the phylogeny of the group being expressed in tabular form. It is considered that *R. antiquitatis* has no affinity with *R. sinus* and *R. platyrhinus*, but is allied to *R. leptorhinus*; while both *R. indicus* and *R. sondaicus* (*javanicus*) are derived from *R. sivalensis*, the latter through the bicorn *R. karnuliensis*. *Aceratherium croizeti*, of the European Oligocene, is referred to the American genus *Amyrnodon*, although the characteristic third upper molar is at present unknown. The Phosphorites of France also yield a species nearly allied to the American *Aceratherium occidentale*. The resemblance of *Lophiodon rhinoceroideus* to the *Rhinocerotidæ* is referred to (*cf.* OSBORN, *suprà*, p. 40).



## i. †TITANOTHERIIDÆ.

EARLE, C. A Memoir upon the Genus *Palæosyops*, Leidy, and its Allies.  
J. Ac. Philad. ix, pp. 267-388, pls. x-xiv.

The author concludes that the family *Lambdaotheriidae* should be abolished, and that *Palæosyops* and its allies should be included in the *Titanotheriidae*, of which they constitute a subfamily, the *Palæosyopinae*. This subfamily is characterized by all the premolars being unlike the molars, whereas in the *Titanotherinae* some of the former are molariform. The genera of the *Palæosyopinae* are distinguished as follows :—

- I. All three incisors present in each jaw.
  - A. External lobes of upper molars very oblique and shallow . . . . 1. *Lambdaotherium*.
  - B. External lobes of upper molars straight and deep.
    - a. Premaxillary symphysis short and round, last upper molar with two inner cones . . . . 2. *Limnohyops*.  
Last upper molar with one inner cone . . . . . 3. *Palæosyops*.
    - b. Premaxillary symphysis elongate and narrow . . . . . 4. *Telmatotherium*.
- II. Only two incisors in each jaw . . . . 5. *Haplacodon*.

The author has some doubts as to the propriety of separating *Limnohyops* and *Telmatotherium* from *Palæosyops*, and concludes that the relationship between the first and third is closer than that between the second and third. The abortion of one of the inner cones in the upper molars of *Limnohyops* is considered, as in the analogous instance of the *Rhinocerotidae*, to indicate the greater specialization. As regards the succession in time of the genera of the whole family, the horned *Titanotherium* is Miocene, the hornless *Diplacodon* Uinta Eocene, *Telmatotherium*, *Palæosyops*, and *Limnohyops* are from the upper Bridger Eocene, while *Lambdaotherium* is from the lower Bridger, and perhaps the underlying Wasatch. *Lambdaotherium* is closely allied to the ancestral stock of the family, but the absence of  $p_1$  may indicate that it is not the actual ancestor.

## INCERTÆ SEDIS.

## j. CHALICOTHERIIDÆ.

*Macrotherium grande*, n. var. *rhodanicum*, DÉPÉRET, Arch. Mus. Lyon, v, p. 63, pls. ii-iv, Miocene, Rhone Valley (skull figured).

## F.—ARTIODACTYLA.

## k. BOVIDÆ.

LYDEKKER, R. Wild Oxen. Land and Water, lii, pp. 738-740 (1891).  
and liii, pp. 25, 53, 54, 79, & 80, woodcuts.

An illustrated popular account of all the living and some of the fossil species.

——. Wild Goats. Field, lxxix, pp. 312, 313, 355, 356, & 393.

A popular illustrated account of all the species.

NEHRING, SB. nat. Fr. 1892, pp. 129 & 130, has notes on the atlas and axis vertebrae of *Bos primigenius*.

SCLATER, P. L. On a New Antelope from Somaliland, and on some other Specimens of Antelopes from the same country. P. Z. S. 1892, pp. 98-102, pl. v, figs.

The new Antelope is a species of *Bubalis*, that generic name being adopted in place of *Alcelaphus*. The other species referred to are those mentioned in the following paper.

——. The Antelopes of Somaliland. Nat. Science, i, pp. 255-265, figs.

An account of all the Antelopes known to inhabit this region. The full list of the species from North Somaliland is now as follows, viz. :—

Swayne's Hartebeest . . .	<i>Bubalis swaynei</i> . . .	" Sig."
Salt's Antelope . . .	<i>Neotragus saltianus</i> . . .	" Sagaro."
Klipspringer . . .	<i>Oreotragus saltator</i> . . .	" Alikhud."
Waterbuck . . .	<i>Cobus</i> , sp. inc. . . .	
Saemmering's Gazelle. . .	<i>Gazella saemmeringi</i> . . .	" Aoul."
Pelzeln's Gazelle. . .	" <i>pelzelni</i> . . .	" Dèro."
Speke's Gazelle . . .	" <i>spekei</i> . . .	" Dèro."
Clarke's Gazelle . . .	<i>Ammodorcus clarkei</i> . . .	" Dibatag."
Waller's Gazelle. . .	<i>Lithocranius walleri</i> . . .	" Gerenuk."
Beisa Antelope . . .	<i>Oryx beisa</i> . . .	" Baet."
Greater Kudu . . .	<i>Strepsiceros kudu</i> . . .	" Goriali Gôdir."
Lesser Kudu . . .	" <i>imberbis</i> . . .	" Arreh Gôdir."

SWAYNE, H. G. C. Field-Notes on the Antelopes of Northern Somaliland. P. Z. S. 1892, pp. 300-308.

THOMAS, O. On the Antelopes of the Genus *Cephalophus*. T. c. pp. 413-430.

A revision of all the species, which are considered to be 18 in number.

WARD, R. New African Antelopes. Field, lxxx, p. 84.

Notices and figures heads of *Oryx callotis*, *Bubalis jacksoni*, and *Connochastes albo-jubatus*.

- Bubalis swaynei*, n. sp., SCLATER, P. Z. S. 1892, p. 98, pl. v, Somaliland ; see also *t. c.* p. 257.
- Bubalis jacksoni*, n. sp., THOMAS, Ann. N. H. (6) ix, pp. 386 & 387, country between the Victoria Nyanza and the Naivasha.
- Bubalis leucoprimum*, n. sp., MATSCHIE, SB. nat. Fr. 1892, p. 137, German East Africa.
- Dumalis jimela*, n. sp., MATSCHIE, *t. c.* p. 135, *ibid.*
- Connochates taurinus*, n. var. *albojubatus*, THOMAS, Ann. N. H. (6) ix, p. 387, Uganda.
- Oryx callotis*, n. sp., THOMAS, P. Z. S. 1892, pp. 195 & 196, pl. xiv, East Africa. Figured by TRUE, P. U. S. Nat. Mus. xv, pl. lxxvi.
- † *Antilope* († *Nagor*) *maupasi*, n. sp., POMEL, C.R. cxv, pp. 213-216, Pleistocene, Algeria.
- Epyceros melampus*, n. var. *johnstoni*, THOMAS, P. Z. S. 1892, pp. 553 & 554, Nyassaland.
- Cephalophus jentinki*, n. sp., THOMAS, *t. c.* p. 417, Liberia.
- Cephalophus dorsalis*, n. var. *castaneus*, THOMAS, *t. c.* p. 421, Cameroons.
- Cephalophus abyssinicus*, n. n., THOMAS, *t. c.* p. 427, to replace the inadmissible *C. madoqua*.
- Cephalophus aquinoctialis*, n. sp., MATSCHIE, SB. nat. Fr. 1892, p. 112, Victoria Nyanza.
- Cephalophus spadix*, figured by TRUE, P. U. S. Nat. Mus. xv, pl. lxxviii.
- Strepsiceros suara*, n. sp., MATSCHIE, *op. cit.* p. 135, German E. Africa.
- Antilope triangularis*, Günther (= *Doratoceros*, Lydekker), provisionally considered by NICOLLS and EGLINGTON (*suprà*, p. 12) to be founded upon abnormal horns of the Kudu.

### l. GIRAFFIDÆ.

MOEWES, F. Ueber die gegenwärtige Verbreitung der Giraffe im Süden des Sambesi. Zool. Gart. xxxiii, pp. 51-53.

- † *Libytherium macrusium*, n. g. & sp., POMEL, C.R. cxv, pp. 100-102, Pliocene, Algeria.

### m. CERVIDÆ.

CAMERON, A. G. The Value of the Antlers in Classification of Deer. Field, lxxix, pp. 625, 703, 741, 860, & 861, figs.

The author urges that antlers are of primary importance in the classification of the Deer, but that they must be studied from an evolutionary and palæontological point of view ; and that those of the first and second year are, in some respects, of more value than those of adult animals. It is considered that *Rangifer*, *Alces*, *Cervus*, and *Cariacus* all indicate primary branches of the family, which have had no connection with one another since antlers first originated, and hence that the component parts

of these antlers cannot be homologized. The brow-tine of *Cervus* is considered to be quite unrepresented in *Cariacus*, the vertically directed tine found in some species of the latter being regarded as distinct from a brow-tine. Hence the Deer are divided into *brow-antlered* and *fork-antlered* types. And it is further considered that Père David's Deer belongs to the second group, and should therefore be regarded as generically distinct from *Cervus*, under the title of *Elaphurus*.

LYDEKKER, R. The Deer of Asia. Land and Water, liii, suppl., Jan. 23, pp. x & xi, & pp. 130, 131, 164, 165, 192, 193, 221, 247, & 248.

POHLIG, H. Die Cerviden des Thüringischen Diluvial-Travertines, mit Beiträgen über undere diluviale und über recente Hirschformen. Palæontographica, xxxix, pp. 215-261, pls. xxiv-xxvii.

This forms the second fasciculus of the fauna and flora of the formation in question. The species include *Cervus giganteus*, *C. dama*, *C. elaphus*, *Alces machlis*, *Rangifer tarandus*, and *Capreolus capræa*. [Vide *infra*.]

POUSARGUES, E. DE. Sur un Anomalie des Pattes Anterieures d'une Biche (*Cervus xanthopygus*). Bull. Soc. Philom. (8) iv, pp. 95-97.

Describes and figures a horny growth near the carpus in this stag.

SCHULER, G. V. Ueber die Ursachen abnormer Geweihbildung bei den Hirscharten, insbesondere die Bildung von mehr als zwei Geweihstangen. JH. Ver. Württ. xlviii, pp. 135-178, pls. iii-vi.

Describes and figures a number of abnormal antlers of Deer, with a discussion of the mode of formation.

*Cervus elaphus*, n. var. *antiqui*, POHLIG, *op. cit.* p. 246, Pleistocene.

*Cervus cashmirianus*, n. var. *yarkundensis*, BLANFORD, P. Z. S. 1892, pp. 116 & 117, Yarkand.

†*Cervus giganteus*: A. NEHRING, SB. nat. Fr. 1892, pp. 3-8, describes a head of the variety *ruffi*, dredged from the Rhone near Worms. This specimen (figured in Deutsche Jäger-Zeitung, xviii, pp. 571-573) shows that the antlers, instead of extending horizontally, are directed upwards and outwards, like those of the Fallow Deer. In Verh. anthrop. Ges. 1892, pp. 125-127, the same author gives reasons for believing that the word *Schelch*, occurring in the "Niebelungen Lied," is not, as has been thought, applicable to this species, but probably refers either to the Elk or to a wild Stallion.

†*Cervus giganteus* (= *euroceros*), n. varr. *germanice* and *italice*, POHLIG, *op. cit.* pp. 220 & 228, Pleistocene.

*Cervus dama*, n. var. *gastuldi*, POHLIG, *op. cit.* p. 241, Pleistocene.

†*Cervus pachygenys*, n. sp., POMEL, C.R. cxv, pp. 213-216, Pleistocene, Algeria.

*Cervulus fœa*, figured by THOMAS, Ann. Mus. Genov. (2) x, pl. x.

*Alces machlis* (= *Cervus alces*), n. varr. *diluvii* and *europæ*, POHLIG, *op. cit.* pp. 236 & 237, Pleistocene.

†*Capreolus rusciniensis*, n. sp., DEFÉRET, Pliocene, Roussillon, France.

#### n. TRAGULIDÆ.

*Tragulus nigricans*, n. sp., THOMAS, Ann. N. H. (6) ix, p. 254, Balabac, Philippines.

†*Hyomoschus peneckeï*, n. sp., HOFMANN, JB. geol. Reichsanst. xlii, p. 72, pl. ii, figs. 4, 5, Miocene, Styria.

#### o. PROTOCERATIDÆ (INCERTÆ SEDIS).

OSBORN, H. F., & WORTMAN, J. L. Characters of *Protoceras* (Marsh), the New Artiodactyl from the Lower Miocene. Bull. Am. Mus. Nat. Hist. iv, pp. 351-372, figs. ; see also Nature, xlvii, pp. 321 & 322 (1893).

The authors describe a skull remarkable for the presence of a number of paired irregular bony processes, comparable to those of *Uintatherium*. Hornless (female) skulls of the same type were also obtained ; and it was found by comparison that both belonged to *Protoceras*, Marsh (Zool. Rec. xxviii, *Mamm.* p. 44). That genus must accordingly indicate a distinct family group of Artiodactyles, approximating, in some degree, to the *Tragulina* through *Leptomeryx*. The feet, however (of which specimens were discovered with the skulls) are of the inadapative modification, and there are important differences in the structure of the cranium. The resemblance of the male skull to that of *Uintatherium* is further increased by the presence of large sabre-like upper tusks.

#### p. CAMELIDÆ.

CRAIN, F. W. Observations on Llama Remains from Colorado and Kansas. Amer. Geol. ix, pp. 257-260.

Restricting the term *Auchenia* to those forms in which the premolars are  $\frac{2}{1}$ , the author considers it doubtful whether any of the West American Llamas belong to that genus. The remainder of the paper is devoted to the description of specimens from the localities mentioned. *Auchenia hesternu*, Leidy, is provisionally referred to *Holomeniscus*.

†*Auchenia huerfanensis*, n. sp., CRAIN, l. c. (?), Pliocene, Huerfano River, Colorado.

*Camelus bactrianus* : BLANFORD, P. Z. S. 1892, pp. 370 & 371, notices the skull and skin of a specimen shot by Major Cumberland in the neighbourhood of Yarkand ; and concludes that all the examples found in that district are feral.

## q. †DICHODONTIDÆ.

†*Dichodon cartieri*, n. sp., RÜTIMEYER, Abh. Schw. pal. Ges. xviii, p. 79, Up. Eocene, Switzerland.

†*Tetraselenodon kowalevskii*, recorded by RÜTIMEYER, *t. c.* p. 82, from same.

## r. ANOPLOTHERIIDÆ.

†*Xiphodontherium pygmaum* and *obliquum*, n. spp., RÜTIMEYER, Abh. Schw. pal. Ges. xviii, p. 74, Up. Eocene, Switzerland.

†*Xiphodontherium schlosseri*, n. sp., RÜTIMEYER, *t. c.* p. 75, *ibid.*

†*Miztotherium gresslyi*, n. sp., RÜTIMEYER, *t. c.* p. 78, *ibid.*

LYDEKKER, R. On *Dacrytherium ovinum* from the Isle of Wight and Quercy Q. J. G. S. xlviii, pp. 1-4, pl. i.

Describes a cranium and mandible of *Dacrytherium cayluzi* from the Quercy Phosphorites, which proves the identity of this form with the *Dichobune ovina* of Owen, from the Oligocene of the Isle of Wight. The species should thus be known as *Dacrytherium ovinum*. It is shown that the mandible referred by Filhol to *D. cayluzi* belongs to another animal. *Hypotamus picteti*, Lyd., is identified with *Dacrytherium* (see also RÜTIMEYER, *suprà*, p. 15).

## s. †CÆNOTHERIIDÆ.

†*Dichobune muelleri*, *langii*, p. 70, and *pygmæa*, p. 72, n. spp., RÜTIMEYER, Abh. Schw. pal. Ges. xviii, Up. Eocene, Switzerland.

## t †ANTHRACOTHERIIDÆ.

†*Hypotamus gresslyi*, n. var. *minor*, RÜTIMEYER, *t. c.* p. 61, *ibid.*

## u. CHEROPOTAMIDÆ.

HOERNES, R. Zur Kenntniss der Milchbezahnung der Gattung *Entelodon*, Aym. SB. Ak. Wien, 1892, Abth. ii, pp. 17-24, 1 pl.

Describes part of a mandibular ramus with the milk dentition, showing that the last milk-molar has the usual trilobed form.

## v. SUIDÆ.

NEHRING, A. Zwei Javanische Wildschweine des Berliner Zoologischen Gartens (wahrscheinlich *Sus longirostris*, Nehring). Zool. Gart. xxxiii, pp. 7-11.

—. Einige neue Notizen über die Langrüsselschweine (*Sus longirostris*) im Berliner Zoologischen Gartens. T. c. pp. 240-242.

Notices two pigs from Java in the Berlin Gardens, which may belong to *S. longirostris*, that form being intermediate between *S. barbatus* and *S. verrucosus*.

SUSSDORF, J. Der Hauer eines Suiden, ein interessanter Bodenseefund. JH. Ver. Württ. xlviii, pp. 238-247.

Describes a lower canine of *Sus scrofa* exhibiting a pathological peculiarity in structure.

† *Cheromorus pygmaeus*, n. sp., DEPÉRET, Arch. Mus. Lyon, v, p. 87, pl. i, Miocene, Grive-St-Alban.

## 7.—CETACEA.

BEAUREGARD, H. Note sur Deux Échouements Récents de *Balænoptera musculus*. CR. Soc. Biol. 1892, pp. 202 & 203.

BENEDEN, P. J. VAN. Un Cétacé Fluviatile d'Afrique. Mém. Ac. Belg. (3) xxiii, pp. 350-355, 1 pl.

Note on *Sotalia teuszii*, with figure of skull.

BOUVIER, E. L. Sur un Échouement d'*Hyperoodon* à l'entree de la Baie de Carentan. CR. Soc. Biol. 1892, pp. 835-838.

—. Observations Anatomiques sur l'*Hyperoodon rostratus*. Ann. Sci. Nat. (7) xiii, pp. 259-320, pls. vii & viii.

Describes, in detail, the external characters and visceral anatomy of a recently stranded specimen.

CAPELLINI, G. Un Delfinide Miocenico, Ossia il Supposto Uomo Fossile di Acquabona presso Arcevia nelle Marche. Atti (Mem. Rend.) Acc. Rom. (5) i, pp. 325-330.

It is considered that the specimen referred to belongs probably either to a *Schizodelphis* or a *Squalodon*.

GORJANOVIC-KRAMBERGER, D. O. Fosilnih Cetaceih Hrvatske i Kranjske. (De Fossilibus Cetaceis Croatiae et Carneolæ.) Rad jugoslav. akad. cxi, pp. 1-21, pls. i-iii.

A memoir in Croatian on fossil Cetaceans from Croatia and Carniola. The specimens are referred to *Champsodelphis*, *Platanista*, *Delphinapterus*, and *Mesocetus*; the two new species being mentioned below.

KÜKENTHAL, W. Mittheilungen über den Carpus des Weisswals (Die Bildung des Hamatums und das Vorkommen von Zwei und Drei Centralien). *Morph. JB.* xix, pp. 56-64, pl. iii.

The occurrence of two centralia is noticed in both *Delphinapterus* and *Monoceros*; and the morphological bearing of this feature, as well as the presence of five distal carpalia, fully discussed.

—. Ichthyosaurier und Wale. *JB. Mineral.* 1892, i, pp. 161-166.

The analogy between Ichthyosaurs and Whales is traced; and as it is probable that the former have descended from armoured reptiles, so the latter (from the discovery of traces of scutes with a fossil Dolphin and *Zeuglodon*) may have taken origin from Mammals furnished with a dermal armour.

—. *Sotalia teuszii*, n. sp., ein Pflanzenfressender (?) Delphin aus Kamerun. *Zool. Jahrb. Abth. f. Syst.* vi, pp. 442-446, pl. xxi.

LYDEKKER, R. On *Zeuglodon* and other Cetacean Remains from the Tertiaries of the Caucasus. *P. Z. S.* 1892, pp. 558-564, pls. xxxvi-xxxviii.

The specimens are from Eocene beds, and are referred to a new species of *Zeuglodon*, and to two representatives of the *Platanistidae*, one of which is regarded as indicating a new genus, while the other is not named. It is considered that the specimens help to confirm the view as to the Cetacean nature of *Zeuglodon* (*vide infra*).

MORENO, F. P. Noticias sobre algunos Cetáceos Fósiles y Actuales de la República Argentina. *Rev. Mus. la Plata*, iii, pp. 381-398, pls. viii-xi.

Describes a recent Cetacean referred to a new species of *Lagenorhynchus*, and two fossil crania provisionally assigned to the *Delphinidae* (q. r.).

POUCHET, G. Note sur la Baleine Observée par Nearque. *CR. Soc. Biol.* 1892, pp. 422 & 423.

Concludes that the Whale seen by Nearchus in the Persian Gulf was a *Megaptera*.

— & BEAUREGARD, H. Note sur l'Ambre Gris. *T. c.* pp. 588-590.

—. Recherches sur le Cachalot. *N. Arch. Mus.* (3) iv, pp. 1-90, pls. i-xii.

A continuation of the elaborate monograph quoted in *Zool. Rec.* xxvi, *Mamm.* p. 48; the present part dealing with the anatomy of the head and brain.



SOUTHWELL, T. Notes on the Seal and Whale Fishery. Zool. (3) xii, pp. 100-105.

TURNER, SIR W. The Lesser Rorqual (*Balanoptera rostrata*) in the Scotch Seas, with observations on its Anatomy. P. R. Soc. Edinb. xix, pp. 36-75, 2 pls.

Describes a female stranded at Granton in 1888, and tabulates all the examples hitherto recorded from the Scotch coasts.

——. Notes on some of the Viscera of Risso's Dolphin (*Grampus griseus*). J. Anat. Phys. (2) vi, pp. 258-270.

#### a. PHYSETERIDÆ.

*Mesoplodon bidens (sowerbiensis)*. FISCHER, C.R. cxiv, pp. 1283-1286, describes the osteology of a specimen stranded at Cap Breton, August, 1888. TEGETMEIER, Field, lxxx, p. 1003, records the stranding of another specimen on the Norfolk coast, Dec. 18th, 1892.

*Hyperoodon rostratus*: BOUVIER's notes, quoted in Zool. Rec. xxviii, *Mamm.* p. 48, translated in Ann. N. H. (6) ix, pp. 484-486.

#### b. PLATANISTIDÆ.

†*Iniopsis caucasica*, n. g. & sp., LYDEKKER, P. Z. S. 1892, p. 562, Eocene, Caucasus.

†*Platanista croatica*, n. sp., GORJANOVIC-KRAMBERGER, Rad jugoslav. akad. cxi, p. 12, Tertiary, Croatia.

†*Champsodelphis carniolicus*, n. sp., GORJANOVIC-KRAMBERGER, *l. c.* p. 6, Tertiary, Carniola.

#### c. DELPHINIDÆ.

*Grampus griseus*: Sir W. TURNER, P. Phys. Soc. Edinb. xi, pp. 1-6, describes one of six examples caught at Hillswick, Shetland, September, 1889. Another captured on the Solway, September 30th, 1892, recorded in Land and Water, liv, p. 405.

*Delphinus dussumieri*, n. n., BLANFORD, Mammals of British India, p. 588 (1891), for *D. longirostris*, Dussumier, *nec* Gray. [Omitted from Zool. Rec. xxviii.]

*Sotalia teuszii*, n. sp., KÜKENTHAL, Zool. JB. vi, pp. 442-446, pl. xxi, Cameroon district. Believed to be herbivorous.

*Lagenorhynchus floweri*, n. sp., MORENO, Rev. Mus. La Plata, iii, p. 383, pls. viii & ix.

- † *Mesocetus poucheti*, n. g. & sp., MORENO, *t. c.* p. 393, pl. x, Tertiary, Argentina.  
 † *Notocetus vanbenedeni*, n. g. & sp., MORENO, *t. c.* p. 395, *ibid.*  
 † *Orcella fluminalis*, identified with *O. brevirostris*; THOMAS, Ann. Mus. Genov. (2) x, p. 39.

#### d. †ZEUGLODONTIDÆ.

- † *Zeuglodon caucasicus*, n. sp., LYDEKKER, P. Z. S. 1892, p. 559, Eocene, Caucasus.

### 8. SIRENIA.

LYDEKKER, R. On a remarkable Sirenian Jaw from the Oligocene of Italy, and its bearing on the Evolution of the *Sirenia*. P. Z. S. 1892, pp. 77-83, woodcut.

Describes part of an upper jaw of a Sirenian from the Tertiaries of Northern Italy, containing milk-teeth. As these teeth showed a masked selenodont structure, it is urged that the specimen indicates the descent of the *Sirenia* from Selenodont Artiodactyle-like Ungulates. It was incidentally shown that *Halitherium veronense*, Zigno, from the same deposits, belongs to *Prorastoma*, Owen.

WALDEYER, W. Ueber den feineren Bau des Magens und Darmkanales von *Manatus americanus*. SB. Ak. Berlin, 1892, pp. 79-85.

### 9. EDENTATA.

BALLOWITZ, E. Das Schmelzorgan der Edentaten, seine Ausbildung im Embryo, und die Persistenz seines Keimrandes bei dem erwachsenen Thier. Arch. mikr. Anat. xl, pp. 133-156, pls. vi & vii.

The existence of an enamel-organ in the embryo of *Dasyus* is confirmed; and it is now shown that a portion of this persists as an epithelial ring at the base of the pulp-cavity.

RÖSE, C. Ueber rudimentäre Zahnanlagen der Gattung *Manis*. Anat. Anz. vii, pp. 618-622.

Records rudimentary dental structures in embryos of *Manis tricuspis* and *M. javanica*.

#### †MEGATHERIIDÆ.

For presence of enamel in teeth of earlier forms, see AMEGHINO, *supra*, pp. 2 & 3.

## †GLYPTODONTIDÆ.

The alleged existence of a plastron is stated by AMEGHINO (*suprà*, p. 3) to be incorrect.

## 10.—MARSUPIALIA.

For list of Australian forms, see OGILBY, *suprà*, p. 12.

COPE, E. D. On the Habits and Affinities of the New Australian Mammal, *Notoryctes typhlops*. Am. Nat. xxvi, pp. 121–128, pl. ix.

Concludes that the affinities of this animal are rather with Insectivores than Marsupials, and that its nearest ally is probably *Chrysochloris*.

DUN, W. S. Notes on the Teeth known as *Sceparnodon ramsayi*, Owen (*Phascolonius gigas*, Lydekker). Rec. Geol. Surv. N.S.W. iii, pp. 25–28, pl. vi.

New specimens from Bingera serve to disprove some of the views of De Vis as to the lower incisors of this type; and thus leave it still probable that *Sceparnodon* may be identical with *Phascolonius*.

GADOW, H. On the Systematic Position of *Notoryctes typhlops*. P. Z. S. 1892, pp. 361–370, figs.

After an exhaustive consideration of the hard and soft parts, the author concludes that *Notoryctes* is an undoubted polyprotodont Marsupial, and that its relationship is nearer to the *Dasyuridæ* than to the *Peramelidæ*.

LECHE, Biol. Fören. iv, pp. 1 & 2, likewise has a note on the affinities of the same genus.

RÖSE, C. Ueber die Zahnentwicklung der Beuteltiere. Anat. Anz. vii, pp. 639–650 & 693–707, figs.

From an examination of a series of foetal specimens, it is concluded that the teeth of Marsupials are developed in the same manner as in other Mammals; the anterior ones being diphyodont, while the true molars are produced as lateral outgrowths, with the exception of the last premolar. The germs of the replacing teeth are, however, aborted, and the permanent teeth consequently belong to the milk-series. In some cases, as in *Didelphys*, the last premolar takes a place among the milk-molars, without displacing one of the latter; although it generally succeeds a milk-tooth in the ordinary manner. It is also considered that the outermost upper incisor of *Perameles*, *Macropus*, and *Phalangista* belongs to the second series, which takes its place alongside those of the first series without any displacement. Further evidence is also obtained in support of the view that the premolars and molars are formed by the coalescence of three or more simple conical teeth.

SYMINGTON, J. On the Organ of Jacobson in the Kangaroo and Rock-Wallaby (*Macropus giganteus* and *Petrogale penicillata*). J. Anat. Phys. xxvi, pp. 371-374, pl. x.

It is shown that in *Ornithorhynchus* the cartilage of the organ in question, in the greater part of its extent, forms a complete tube, from which passes, internally, a turbinative process; no indications of such a process occurring in the *Metatheria* and *Eutheria*. Further, in *Ornithorhynchus* the organ, which is very large, extends forwards as well as backwards beyond its opening into the naso-palatine foramen, while in other Mammals the opening, which may be either into that foramen or into the nasal cavity, represents the anterior end of the organ.

— The Cerebral Commissures in the *Marsupialia* and *Monotremata*. T. c. pp. 22-84, pls. i-iii, figs.

It is concluded that the cerebral commissures of Monotremes and Marsupials may be distinguished from those of Eutherians by the following characters:—(1) The anterior commissure is as large as, and generally much larger than, any other transverse commissure of the cerebrum, and it unites the whole of the cortex of the two hemispheres, except the gyri dentati and hippocampi majores. (2) They have no true corpus callosum. (3) The superior transverse commissure is simply one for the gyri dentati and hippocampi majores. In the Eutherians, on the other hand, the following conditions obtain:—(1) The anterior commissure is much smaller than the other transverse commissures, and it never extends to the cortex on the upper surface of the cerebral hemispheres, or to that on the upper part of the inner surface of the same. (2) A true corpus callosum, and likewise (3) a hippocampal commissure are present.

ZIETZ, A. List of South Australian Species of Kangaroos and Wallabies. Tr. R. Soc. S. Austr. xv, pp. 18 & 19.

#### a. PHALANGEBIDÆ.

*Acrobates pulchellus*, n. sp., ROTHSCHILD, P. Z. S. 1892, p. 546, Island in Dutch New Guinea.

#### b. †AMPHITHERIIDÆ.

†*Telacodon laevis*, n. g. & sp., MARSH, Am. J. Sci. (3) xliii, p. 258, Cretaceous, Wyoming.

†*Batodon tenuis*, n. g. & sp., MARSH, l. c. *ibid*.

#### c. INCERTÆ SEDIS.

†*Stagodon validus*, n. sp., MARSH, Am. J. Sci. (3) xliii, p. 256, Cretaceous, Wyoming.

† *Thlæodon paslanicus*, n. g. & sp., COPE, Am. Nat. xxvi, pp. 758-760, Cretaceous, Wyoming. Founded upon an imperfect mandible, in which the angle is wanting, considered to belong either to a Marsupial or a Monotreme.

## 11. MONOTREMATA.

BAUR, Am. Nat. xxvi, pp. 72 & 435, records the absence of zygophyses in the cervical vertebræ as a new fact. CARUS, t. c. p. 965, points out that OWEN had long since noticed the fact of their absence, except in the atlas of *Echidna*.

HILL, A. The Cerebrum of *Ornithorhynchus paradoxus*. P. R. Soc. lii, pp. 163 & 164. [Abstract.]

Although the brain is distinctly Mammalian, it presents certain peculiar features connected with the rhinencephalon, hippocampus, and cerebral commissures, which have not hitherto been noticed. The olfactory bulb has a thin stalk, and is quite free from the frontal portion of the hemisphere. The hippocampus is very large, and lies entirely dorsal of the velum interpositum, while it is continued forwards to the extreme front of the brain, thus forming with the rhinencephalon a loop open in front. No commissural fibres cross the *incisura pallii longitudinalis* dorsally of the hippocampus; and it is concluded such fibres as do cross from one hemisphere to another do not represent a true corpus callosum. Exclusive of the *incisura rhinalis* and *dentary fossa*, which scarcely come under this category, the cortex is completely destitute of convolutions.

TURNER, Sir W. The Cerebral Hemispheres of *Ornithorhynchus paradoxus*. J. Anat. Phys. (2) vi, pp. 358-361.

The author finds that the rhinencephalon is more highly organized and larger in *Echidna* than in *Ornithorhynchus*; while the pallial part is on a larger and more complicated plan. Moreover, the cerebellum is likewise a larger organ, with its surface more minutely fissured in *Echidna*. Hence it is concluded that the brain of the latter is decidedly more highly organized than that of *Ornithorhynchus*.

### a. ECHIDNIDÆ.

*Echidna aculeata*: remarks on young specimens; W. N. PARKER, Rep. Brit. Ass. 1891, p. 693.

*Proechidna nigroaculeata*, n. sp., ROTHSCHILD, P. Z. S. 1892, p. 545, Dutch New Guinea.

12. †*MULTITUBERCULATA*.

- † *Cimolodon parvus*, n. sp., O. C. MARSH, Am. J. Sci. (3) xliii, p. 254,  
Cretaceous, Wyoming.
- † *Cimolodon agilis*, n. sp., MARSH, t. c. p. 255, *ibid*.
- † *Allacodon fortis*, n. sp., MARSH, l. c. *ibid*.
- † *Allacodon rarus*, n. sp., MARSH, t. c. p. 256, *ibid*.
- † *Oracodon conulus*, n. sp., MARSH, l. c. *ibid*.



# III. A V E S.

BY

R. BOWDLER SHARPE, LL.D.

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THE year 1892 has been rendered remarkable by the publication of Dr. Gadow's *Classification of Birds*, by Professor Mivart's popular *Introduction to Ornithology*, and by the excellent work by Captain Charles Bendire on the *Life-histories of American Birds*. The zoo-geographical work of Dr. C. Hart Merriam and Mr. J. A. Allen, though based upon studies of the *Mammalia*, possesses the deepest interest for Ornithologists. The year will also probably be notable for the foundation in this country of the 'British Ornithologists' Club,' whose monthly 'Bulletin' contains a record of most important work, while the 'Ibis' is more flourishing than ever.

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## ARRANGEMENT OF RECORD.

I.—TITLES OF SEPARATE WORKS, AND OF THE MORE IMPORTANT PAPERS PUBLISHED IN PROCEEDINGS OF SOCIETIES, &c.

II.—FAUNISTIC.

III.—ANATOMY AND MISCELLANEOUS.

IV.—SYSTEMATIC.

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## I.—TITLES.\*

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\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.



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## II.—FAUNISTIC.

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**ETHIOPIAN REGION.** See Bocage, Büttikofer, Eglinton, Homeyer, Nicholls, Ogilvie-Grant, Reichenow, Rendall, Sharpe, Shelley.

**INDIAN REGION.** See Brooks, Büttikofer, Davison, De la Touche, Oustalet, Salvadori, Sharpe, Vorderman.

**AUSTRALIAN REGION.** See Buller, Büttikofer, Campbell, Collett, De Vis, Forbes, Meyer, North, Rothschild, Salvadori, Tristram, Wilson.

**NEARCTIC REGION.** See Allen, "Anon.", Anthony, Bendire, Bryant, Cory, Keeler, Loomis, Merriam, Packard.

**NEOTROPICAL REGION.** See Alfaro, Allen, Berlepsch, Boucard, Chapman, Cherrie, Cory, Godman, Hartert, Holland, Hudson, Kerr, Peters, Quelch, Salvin, Sclater, Scott, Tippenhauer, Wolf.

## III.—ANATOMY AND MISCELLANEOUS.

**ANATOMY.** See Beddard, Couvreur, Dareste, Fabani, Fürbringer, Helm, Klug, Parker.

**OSTEOLOGY.** See Beddard, Meyer.

**OOLOGY.** See Bendire, Blasius, Crowley, Hall, Hewatson, North.

**NEO-OOLOGY.** See Evans.

**PTERYLOGRAPHY.** See Church, Ficalbi, Keeler, Martorelli.

**FOSSIL BIRDS.** See Déperet, Forbes, Lydekker, Milne-Edwards, Shufeldt.

**BIOGRAPHY.** See Boucard, Burmeister, Büttikofer, Pelzeln, Tschusi-Schmidhoffen.

**LITERATURE.** See Persina, Sclater (W. L.).

**CLASSIFICATION.** See Fürbringer, Gadow, Mivart.

**GEOGRAPHICAL DISTRIBUTION.** See Giglioli, Palacky.

**MIGRATION.** See Cordeaux, Czýnk, Dixon.

## IV.—SYSTEMATIC.

## Subclass RATITÆ.

## Order STRUTHIONIFORMES.

See NICOLLS, J. A., & EGLINGTON, W.

## Order CASUARIIFORMES.

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## Subclass CARINATÆ.

## Order CRYPTURIFORMES.

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& 3); *Callipepla squamata* (pl. i, figs. 4 & 5), *C. squamata castanogastris* (pl. i, figs. 6 & 7), *C. californica* (pl. i, figs. 8-10), *C. gambeli* (pl. i, figs. 11-14); *Cyrtonyx montezumae* (pl. i, fig. 15); *Dendragapus obscurus fuliginosus* (pl. i, figs. 16-19), *D. canadensis* (pl. i, figs. 20-23); *Bonasa umbellus* (pl. ii, fig. 1), *B. umbellus togata* (pl. ii, fig. 2), *B. umbellus umbelloides* (pl. ii, fig. 3), *B. umbellus sabini* (pl. ii, fig. 4); *Lagopus lagopus* (pl. ii, figs. 5-10), *L. rupestris* (pl. ii, figs. 11-15), *L. leucurus* (pl. ii, figs. 16 & 17); *Tympanuchus americanus* (pl. ii, figs. 18-20), *T. cupido* (pl. iii, fig. 2), *T. pallidicinctus* (pl. iii, fig. 1); *Pediocates phasianellus* (pl. iii, figs. 3-5), *P. phasianellus columbianus* (pl. iii, figs. 6-8), *P. phasianellus campestris* (pl. iii, figs. 9 & 10); *Centrocercus urophasianus* (pl. iii, figs. 11-13).

#### Suborder CRACES.

*Ortalis vetula maccalli*: egg figured; C. BENDIRE, t. c. pl. iii, fig. 16.  
*Penelope purpurascens*: skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxxviii.

#### Suborder PHASIANI.

##### Family PHASIANIDÆ.

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### Family PERDICIDÆ.

#### Subfamily PERDICINÆ.

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*F. subtorquatus stuhlmanni*, n. subsp., Victoria Nyanza, A. REICHE-  
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#### Subfamily ODONTOPHORINÆ.

- Oreortyx pictus plumiferus* : its food ; R. BELDING, Zoe, iii, pp.  
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*Odontophorus guianensis* : skeleton figured ; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxxix.

*Euppsychortyz gouldi*, n. sp., Curaçao ; H. VON BERLEPSCH, J. f. O. 1892, pp. 98–101.

### Family MELEAGRIDÆ.

*Meleagris gallopavo ellioti*, n. subsp., Rio Grande, Texas ; G. B. SENNETT, Auk, ix, pp. 167–169, pl. iii. *M. gallopavo* (fig. 14) and *M. gallopavo mexicana* (fig. 15) : eggs figured ; C. BENDIRE, Life Histories N. A. Birds, pl. iii.

### Suborder HEMIPODII.

See NICOLLS, J. A., & EGLINGTON, W.

*Turnix nigricollis* : sexual differences ; W. R. OGILVIE-GRANT, Ibis, 1892, pp. 346 & 347 : nesting in captivity ; LORD LILFORD, t. c. pp. 466 & 467.

### Suborder PTEROCLETES.

See NICOLLS, J. A., & EGLINGTON, W.

*Syrhaptes paradoxus* : notes on the incursion of 1891 ; V. BITTER VON TSCHUSI ZU SCHMIDHOFFEN, Orn. Jahrb. iii, pp. 118–122 : in the North of France ; M. DUBOIS, Bull. Soc. L. Nord France, ix, pp. 11 & 12.

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### Order COLUMBIFORMES.

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*Haplopelia inornata*, n. sp., Cameroons, A. REICHENOW, Ber. Allg. Deutschl. Orn. Ges., Feb. 1892, p. 6 ; *id.*, J. f. O. 1892, p. 179.

- Turtur*: notes on the African species of the genus; A. REICHENOW, J. f. O. 1892, pp. 12-15.
- Leucosarcia picata*: skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxxvii.
- Carpophaga œnothorax*, n. sp., I. of Engano, T. SALVADORI, Ann. Mus. Genov. (2) xii, pp. 130 & 140.
- Myristicivora luctuosa*: skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxxvi.
- Ptilopus coronulatus huonensis*, n. subsp., Huon Gulf, E. New Guinea; *id.* J. f. O. 1892, pp. 263 & 264. *P. salvadorii*, n. sp., Jobi I, W. ROTHCHILD, Bull. B. O. C. iii, p. x. *P. tristrami*, n. sp., Marquesas Is., T. SALVADORI, Boll. Mus. Zool. Tor. vii, pp.
- Ioteron melanospila*: skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxxv, fig. 1.
- Phlogoenas bimaculata*, n. sp., Makassar, T. SALVADORI, Bull. B. O. C., No. 3, p. 8. *P. albicollis*, n. sp., Box I, *id. t. c.* p. x.
- Macropygia albicapilla*: skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxxv, fig. 2.
- Macropygia cinnamomea*, n. sp., I. of Engano, T. SALVADORI, Ann. Mus. Genov. (2) xii, pp. 140 & 141.
- Zenaida richardsoni*, = *Z. zenaida*; C. R. CORY, Cat. W. Ind. Birds, p. 138.
- Columbigallina passerina terrestris*, n. subsp., E. United States, F. M. CHAPMAN, Bull. Am. Mus. iv, p. 293.
- Geophaps scripta*: notes on nestlings; P. L. SCLATER, P. Z. S. 1892, pp. 76 & 77.
- Osmotreron griseicaula*: skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxxiv.

## Order OPISTHOCOMIFORMES.

### Suborder OPISTHOCOMI.

- Opisthocomus cristatus*, crop and sternum of: a contribution to the question of the correlation of organs and the inheritance of acquired characters; H. GADOW, P. R. Irish Ac. (3) ii, pp. 147-154, pls. vii & viii.

### Suborder PSEUDOPISTHOCOMI.

- Filholornis*, n. g. Type, *F. paradoxa*, n. sp. (fossil), Eocene of S. France; A. MILNE-EDWARDS, C.R. ii, Congr. Orn. Intern. ii, pp. 67 & 68. *F. gravis* and *F. debilis*, n. spp., *id. t. c.* p. 69.

## Order RALLIFORMES.

- Elaphrocnemus*, n. g. Type, *E. phasianus*, n. sp., Eocene of S. France; A. MILNE-EDWARDS, C.R. ii, Congr. Orn. Intern. ii, pp. 77 & 78. *E. gracilis* and *E. cruz*, n. sp. 78 & 79.

- Orthocnemus*, n. g. Type, *O. gallicus*, n. sp. (fossil), Eocene of S. France; *id. t. c.* pp. 74 & 75. *O. cursor*, n. sp., *id. t. c.* p. 76. *O. major*, n. sp., *id. t. c.* pp. 76 & 77.
- Rallus dasyptus*, n. sp. (fossil), *id. t. c.* pp. 73 & 74. *R. arenarius*, n. sp., *id. t. c.* p. 74. *R. longirostris cubanus*, n. subsp., Cuba, F. M. CHAPMAN, Bull. Am. Mus. iv, pp. 288 & 289.
- Cabalus modestus*, Hutton, is the young of *C. dieffenbachii*, Gray; H. O. FORBES, Bull. B. O. C., No. 4, p. xx. [Cf. H. O. FORBES, Bull. B. O. C. ix, p. xxxix.]
- Aramides plumbeicollis*, n. sp., Costa Rica, J. C. ZELEDON, Ann. Mus. Costa Rica, iii, p. 134.
- Crecoides*, n. n. for *Crecioides*, Shuf.; SHUFELDT, J. Ac. Philad. ix, pp. 411 & 412, notes.
- Porzana bailloni*, in Herefordshire; W. H. M. AYRES, Zool. 1892, p. 27: in Yorkshire; J. BACKHOUSE, Nat. 1892, p. 308: in Somersetshire; H. ST. B. GOLDSMITH, Zool. 1892, p. 412.
- Porzanula*, n. g. Type, *P. palmeri*, n. sp., Laysan I., North Pacific; F. W. FROHAWK, Ann. N. H. (6) ix, pp. 247-249.
- Rallus ecaudatus*, King, and *R. sandwicensis*, Gm., belong to the genus *Pennula*; G. HARTLAUB, Abh. Ver. Brem. xii, heft. 3, pp. 395-397.
- Porzanula* (ut suprâ) = *Pennula*; *id. t. c.* p. 399.
- Rallus sandwicensis*, is a *Pennula*, and probably = *P. ecaudata*, King; R. B. SHARPE, Bull. B. O. C., No. 4, p. xx. [Cf. HARTLAUB, *op. cit.* No. 5, p. xxiv, and SHARPE, *op. cit.* No. 5, p. xxiv.]
- Kittlitsia*, n. g. [but cf. HARTERT, Zool. Rec. xxviii, *Aves*, p. 57]. Type, *Rallus monasa*, Kittl., from Ualan; G. HARTLAUB, Abh. Ver. Brem. xii, heft. 3, p. 391.
- Aphanolimnas*, n. n. pro *Kittlitsia*, Hartl. (nec Hartert); R. B. SHARPE, Bull. B. O. C., No. 4, p. xx (Dec., 1892).
- Corethrura elegans*, from the Cameroons; A. REICHENOW, J. f. O. 1892, pp. 178 & 179.
- Ocydromus insignis*, n. sp. (subfossil), Chatham Is., H. O. FORBES, Tr. N. Z. Inst. xxiv, p. 188.
- Aphanapteryx hawkinsii*, n. sp. (subfossil), Chatham Is., *id. t. c.* p. 189.
- Diaphorapteryx*, n. g. for the preceding; *id.*, Bull. B. O. C., No. 4, p. xxi. [Genus cancelled, *id.*, Bull. B. O. C., No. 9, p. 1.]
- Porphyrio mackintoshi*, n. sp. (fossil), Queensland, C. W. DE VIS, P. Linn. Soc. N.S.W. (2) vi, p. 440, pl. xxiv, fig. 2a.
- Notornis parkeri*, n. sp. (fossil), New Zealand, H. O. FORBES, Tr. N. Z. Inst. xxiv, p. 187.
- Aptornis*: notes on the genus; A. HAMILTON, *t. c.* pp. 175-184.
- Gallinula coccineipes* [Zool. Rec. xxviii, *Aves*, p. 37], figured; J. D. DE LA TOUCHE, Ibis, 1892, pl. xii [= *Amaurornis akooli*]. *G. peralatu*, n. sp. (fossil), Queensland, C. W. DE VIS, P. Linn. Soc. N.S.W. (2) vi, pp. 440 & 441, pl. xxiv, figs. 3a & 3b. *G. chloropus* × *Fulica atra*; H. KREYE, Orn. Jahrb. iii, p. 172.

- Porphyriornis*, n. g. Type, *P. comeri*, n. sp., Gough I.; J. A. ALLEN, Bull. Am. Mus. iv, pp. 57 & 58.  
*Tribonyx effusus*, n. sp. (fossil), Queensland, C. W. DE Vries, P. Linn. Soc. N.S.W. (2) vi, pp. 439 & 440.  
*Fulica minor*, n. sp. (fossil), Pliocene of Oregon, R. W. SHUFELDT, J. Ac. Philad. ix, p. 412.

### Order PODICIPEDIDIFORMES.

- SHUFELDT, R. W. Concerning the Taxonomy of the North American Pygopodes, based upon their osteology. J. Anat. Phys. xxvi, pp. 198-203.  
*Podiceps nigricollis*, in Merionethshire; G. H. CATON HAIGH, Zool. 1892, p. 311: in Anglesea; W. BANKS, t. c. p. 411: in Norfolk; T. BIDWELL, t. c. p. 358. *P. rubricollis*, in Devon; E. A. S. ELLIOT, t. c. p. 331.  
*Podiceps auritus*, supposed nesting in Ross-shire, = *P. fluviatilis*; A. W. EVANS, Ann. Scott. Nat. Hist. i, pp. 171 & 172.

### Order COLYMBIFORMES.

- Motions on land; HAIGH, Zool. 1892, p. 226.  
 Taxonomy; see SHUFELDT, R. W., *ut supra*.  
*Urinator imber*: migration in Massachusetts; G. H. MACKAY, Auk, ix, p. 292.

### Order HESPERORNITHIFORMES.

- Hesperornis regalis*: restoration; H. N. HUTCHINSON, Extinct Monsters, p. 109, pl. ii.

### Order PROCELLARIIFORMES.

- DALGLEISH, J. J. Notes on the Petrels of Madeira and adjoining Seas. P. Phya. Soc. Edinb. xi, pt. 1, pp. 27-30.  
*Puffinus major*, in Tiree; J. A. HARVIE-BROWN, Ann. Scott. N. H. i, p. 74. *P. major* and *P. cinereus*, in France; L. BUREAU, Bull. Soc. Ouest France, ii, pp. 39 & 40, pl. iii, figs. 1 & 2.  
*Cymochorea leucorhoa*, off Scottish Coasts; W. EVANS, Ann. Scott. N. Hist. i, pp. 74-76.  
*Oceanitis oceanicus*, in Ireland; R. L. PATTERSON, Ibis, 1892, pp. 180 & 181: in Scotland; H. SAUNDERS, t. c. p. 183: in Jura; H. EVANS, Ann. Scott. N. H. i, p. 18.  
*Procellaria pelagica* used as a candle in the Orkneys and S. Kilda; E. LOVETT, P. Croydon Club, pp. 331 & 332: *id.*, J. Northampt. Soc. 1892, pp. 113 & 114.

## Order ALCIFORMES.

KEELER, C. A. Notes on the Auks breeding in the Farallone Islands. *Zoe*, iii, pp. 144-165, pls. xviii-xxi.

*Alca impennis*: an unrecorded egg; F. A. LUCAS, *Auk*, ix, p. 198: figured; H. GADEAU DE KERVILLE, *Faun. Norm.* iii, pl. i.

*Uria troile*, figured; LORD LILFORD, *Col. Fig. Br. Birds*, part xxi.

## Order LARIFORMES.

## Family STERCORARIIDÆ.

*Stercorarius catarrhactes*, in Shetland; W. E. CLARKE, *Ann. Scott. N. H.* i, pp. 87-92. *S. parasiticus* and *S. crepidatus*: notes on; H. SAUNDERS, *Ibis*, 1892, pp. 183-185.

*Lestris pomarinus*, figured; LORD LILFORD, *Col. Fig. Br. Birds*, part xxi.

## Family LARIDÆ.

## Subfamily LARINÆ.

*Larus robustus*, n. sp. (fossil), and *L. oregonus*, n. sp. (fossil), *Equus Beds*, Oregon, R. SHUFELDT, *J. Ac. Philad.* ix, p. 398. *L. argentatus smithsonianus*, Habits in New England; G. H. MACKAY, *Auk*, ix, pp. 221-228. *L. leucopterus*, and *L. glaucus*, in Ireland; R. WARREN, *Irish Nat.* i, pp. 129-134 & 154-156. *L. leucopterus*, near Aldeburgh; F. MENTEITH OGILVIE, *Zool.* 1892, p. 114: In West and North of Scotland; DUKE OF ARGYLL, *Ann. Scott. N. H.* i, pp. 140-141. *L. eburneus*, in co. Dublin; E. G. WADDILOVE, *Zool.* 1892, p. 228. *L. ridibundus*, figured; LORD LILFORD, *Col. Fig. Br. Birds*, part xxi. *L. canus*, a monstrosity; G. DE KERVILLE, *J. de l'Anat. Phya.* xxviii, pp. 564-566, pl. xviii.

*Bissa tridactyla*, its rudimentary hallux; W. E. CLARKE, *Ibis*, 1892, pp. 442-447.

*Xema sabinii*, near Bournemouth; F. COBURN, *Zool.* 1892, p. 22: in Cornwall; T. H. CORNISH, *t. c.* p. 22: in Norfolk; H. W. FEILDEN, *t. c.* p. 423: in Pembrokeshire; C. JEFFREYS, *t. c.* p. 423: in San Francisco Bay; W. E. BRYANT, *Zoe*, iii, p. 165.

## Subfamily STERNINÆ.

*Anous stolidus*, nests photographed; A. J. CAMPBELL, *C.R.* ii, *Congr. Orn. Intern.* ii, p. 157.

## Order ÆGIALORNITHIFORMES.

[INCERTÆ SEDIS. *Cf. Zool. Rec.* xxviii, *Aves*, p. 39.]

*Ægialornis gallicus*, Lydekker, = *Tachyornis* [*Cypselidæ*, q.v.]; A. MILNE-EDWARDS, *C.R.* ii, *Congr. Orn. Intern.* ii, pp. 66 & 67.

## Order CHARADRIIFORMES.

LEGGE, W. V. On the Geographical Distribution of the Australian *Limicola*. Pr. Austr. Ass. 1892, pp. [1-50].

## Suborder CHARADRII.

## Family CHARADRIIDÆ.

*Charadrius squatarola*, habits in Massachusetts; G. H. MACKAY, Auk, ix, pp. 143-152.

*Vanellus vulgaris*, notes on nesting; R. HOWSE, Nat. 1892, pp. 137-139.

*Ægialitis asiatica*, figured; LORD LILFORD, Col. Fig. Br. Birds, part xxi.

## Family SCOLOPACIDÆ.

*Scolopax rusticula*, in Dalmatia; H. HÄNISCH, Orn. Jahrb. iii, pp. 27-30 & 189-191: nesting in North Uist; J. C. ORDE, Ann. Scott. N. H. i, p. 73.

*Numenius borealis*, habits and migration in New England; G. H. MACKAY, Auk, ix, pp. 16-21: figured; LORD LILFORD, Col. Fig. Br. Birds, part xxi: in California; W. E. BRYANT, Zool. iii, p. 165, [= *N. hudsonicus*; L. BELDING, t. c. p. 257]. *N. arquata*, in Worcestershire in July; F. COBURN, Zool. 1892, p. 23: on Long Island; W. DUTCHER, Auk, ix, p. 392. *N. hudsonicus*, in Massachusetts; G. H. MACKAY, Auk, ix, pp. 345-352. *N. cyanopus* and allies; W. LEGGE, P. R. Soc. Tasm. 1888, p. 133-136.

*Pavoncella pugnax*, in North Carolina; H. H. BRIMLEY, Auk, ix, pp. 299 & 300: in Orkney; T. PEACE, Ann. Scott. N. H. i, p. 73: in the Outer Hebrides, *id.*, t. c. p. 139.

*Totanus fuscus*, in Ireland; E. WILLIAMS, Zool. 1892, p. 35. *T. incanous*, figured; S. B. WILSON & A. H. EVANS, Av. Haw. part iii.

*Eurynorhynchus pygmaeus*, Hainan; G. HARTLAUB, Abh. Ver. Brem. xii, p. 330.

*Tringa temminckii*, in Japan; L. STEJNEGER, P. U. S. Nat. Mus. xv, p. 371. *T. minutilla*, in Devonshire; H. A. EVANS, Zool. 1892, p. 141. *T. acuminata*, in Norfolk; T. SOUTHWELL, Zool. 1892, pp. 356-358: H. SEEBOHM, Bull. B. O. C. No. 3, p. ix.

*Ereunetes occidentalis*, in Connecticut; W. E. TREAT, Auk, ix, p. 389.

*Calidris arenaria*, figured; LORD LILFORD, Col. Fig. Br. Birds, part xxi: notes on its distribution; A. NEWTON, Add. to Ibis for July, 1892, p. 5; *id.* Nature, xlv, p. 222; *id.* Rec. Austral. Mus. ii, p. 22: in the Malay Archipelago; H. SEEBOHM, Ibis, 1892, pp. 469-470.

*Tringoides hypoleucus*, skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxii, fig. 2.

*Limosa lapponica*, figured; LORD LILFORD, Col. Fig. Br. Birds, part xxii.

*Himantopus leucocephalus*, in Norfolk Island, Lord Howe Island, and the New Hebrides; A. J. NORTH, Rec. Austral. Mus. ii, p. 38.

*Crymophilus fulicarius*, in Nantucket Island, Massachusetts; G. H. MACKAY, Auk, ix, pp. 294-298: in Princetown Harbour, Mass.; G. S. MILLER, t. c. pp. 288 & 289: in Leicestershire; A. MATTHEWS, Zool. 1892, p. 26: in Warwickshire; F. COBURN, t. c. p. 26: in 1892. [VOL. XXIX.]



Ireland ; R. PATTERSON, Zool. 1892, pp. 26, 32, & 33 : in Islay, R. S. SKIRVING, Ann. Scott. N. H. i, p. 72 : in Jura ; H. EVANS, *t. c.* p. 72 : in S.W. Scotland ; R. SERVICE, *t. c.* p. 73 : in Devon ; W. E. H. PIMLEY, *t. c.* p. 28. *P. hyperboreus* : notes on nesting and migration ; S. VON CHERNEL, C.R. ii, Congr. Orn. Intern. ii, pp. 137-144, pl. 2 : in Ireland ; E. WILLIAMS, Zool. 1892, p. 28.

#### Suborder PARRÆ.

*Jacana spinosa*, in Jamaica ; T. D. A. COCKERELL, P. Z. S. 1892, p. 472.

#### Suborder ŒDICNEMI.

*Œdicnemus crepitans*, in Kent ; W. VERNER, Zool. 1892, p. 24.

#### Suborder OTIDES.

See NICOLLS, J. A., and EGLINGTON, W.

*Otis tarda*, figured ; LORD LILFORD, Col. Fig. Br. Birds, part xxi : in Orkney, T. PEACE, Ann. Scott. N. H. i, p. 138. *O. tetraz*, in Silesia ; E. URBAN, Orn. Jahrb. iii, p. 34 : in Moravia ; F. SCHALLER, *ibid.* : in Steiermark ; A. J. MOJSISOVICS, *ibid.* : in Northern Dalmatia ; H. HÄNISCH, *t. c.* pp. 112 & 113.

### Order GRUIFORMES.

*Geranopsis elatus*, n. sp. (fossil), A. MILNE-EDWARDS, C.R. ii, Congr. Orn. Intern. ii, pp. 72 & 73.

*Grus leucogeranus*, in the Hebrides [Zool. Rec. xxviii, *Aves*, p. 41], was an escaped specimen ; W. E. CLARKE, Ibis, 1892, p. 181.

### Order PELARGIFORMES.

#### Suborder ARDEÆ.

HÄNISCH, H. Ornithologische Mittheilungen aus dem unteren Narentathale. Reiher (*Ardeidæ*). Orn. Jahrb. iii, pp. 55-60.

*Palæpelagus*, n. g. Type, *P. nobilis*, n. sp. (fossil), Queensland ; C. W. DE VIS, P. Linn. Soc. N.S.W. (2) vi, pp. 441-443, pl. xxiv, figs. 4a, 4a'.

*Ardea amissa*, n. sp. (fossil), Eocene of S. France ; A. MILNE-EDWARDS, C.R. ii, Congr. Orn. Intern. ii, p. 73. *A. paloccidentalis*, n. sp. (fossil), Pliocene of Oregon ; R. W. SHUFELDT, J. Acad. Philad. ix, p. 411. *A. garzetta*, figured ; LORD LILFORD, Col. Fig. Br. Birds, part xxi.

*Herodias egretta*, in Norfolk I. ; A. J. NORTH, Rec. Austral. Mus. ii, p. 37,

*Botaurus neoxenus* : male described ; W. E. D. SCOTT, Auk, ix, pp. 141 & 142.

#### Suborder PLATALEÆ.

*Platalea leucorodia*, in Heligoland ; H. GÄTKE, Orn. Jahrb. iii, p. 201 : its breeding places in Holland ; F. E. BLAAUW, Ibis, 1892, p. 468.

*P. subtenuis*, n. sp. (fossil), Queensland, C. W. DE VIS, P. Linn. Soc. N.S.W. (2) vi, pp. 443 & 444, figs. 5a & 5b.

## Order TAPINOPIFORMES.

*Tapinopus*, n. g. Type, *T. ellioti*, n. sp. (fossil), Eocene of S. France ;  
A. MILNE-EDWARDS, C.R. ii, Congr. Orn. Intern. ii, pp. 79 & 80.

## Order PHÆNICOPTERIFORMES.

*Phanicopterus copei*, n. sp. (fossil), Equus Beds, Oregon ; R. W. SHUFELDT, J. Ac. Philad. ix, pp. 410 & 411.

## Order ANSERIFORMES.

See NICOLLS, J. A., and EGLINGTON, W.

*Olor paloregonus* (fossil) : notes on ; R. W. SHUFELDT, J. Ac. Philad. ix, p. 409.

*Cnemidornis gracilis* and *C. minor*, n. spp. (fossil) ; H. O. FORBES, Tr. N. Z. Inst. xxiv, pp. 187 & 188.

*Bernicla ruficollis*, figured ; LORD LILFORD, Col. Fig. Br. Birds, part xxi. *B. munroii*, n. sp., Kauai, Sandwich, Is., W. ROTHSCHILD, Ann. & Mag. N. H. (6) x, p. 108. *B. leucopsis*, in Venexia, E. ARRIGONI DEGLI ODDI, Atti Soc. Ital. xxxiv, pp. 117-121. *B. propinqua*, n. sp. (fossil), Equus Beds, Oregon, SHUFELDT, J. Ac. Philad. ix, pp. 408 & 409.

*Anser anatoides*, n. sp. (fossil), Pliocene of France ; C. DÉPERET, C.R. cxiv, p. 690. *A. cinereus*, *A. segetum*, and *A. albifrons*, in Dalmatia ; G. KOLAMBATOVIC, Glasnik. Naravosl. Druž. vi, pp. 168-171 (1891).

*Biziura lautouri*, n. sp. (fossil), from New Zealand ; H. O. FORBES, Tr. N. Z. Inst. xxiv, p. 188.

*Anseranas melanoleuca*, in Tasmania ; W. F. PETTERD, P. R. Soc. Tasm. 1888, pp. 91 & 92.

*Tadorna casarca* : on the recent occurrence in the British Is. ; F. M. OGILVIE, Zool. 1892, pp. 392-398 : in Ireland ; R. J. USSHER, t. c. pp. 334 & 335. *T. rutila*, in co. Donegal ; J. S. ELLIOTT, t. c. p. 311.

*Anas condoni*, n. sp. (fossil), Equus Beds, Oregon, R. W. SHUFELDT, J. Ac. Philad. ix, pp. 406 & 407. *A. laysanensis*, n. sp., Laysan I., W. ROTHSCHILD, Bull. B. O. C., No. 4, p. xvii. *A. angustirostris* and *Fuligula marila*, in Bohemia ; — RIHA, Orn. Jahrb. iii, pp. 260 & 261. *A. boschas* × *A. americana* ; D. G. ELLIOT, Auk, ix, pp. 160-166.

*Spatula clypeata* nesting in Orkney ; W. HARVEY, Ann. Scott. N. H. i, p. 138 : in co. Westmeath, F. J. BATTERSBY, Zool. 1892, p. 311.

*S. variegata* in Tasmania ; A. J. NORTH, Rec. Austral. Mus. ii, p. 37.

*Harelda glacialis* on the Suffolk Coast in Summer ; F. M. OGILVIE, Zool. 1892, p. 109.

*Somateria mollissima*, figured ; LORD LILFORD, Col. Fig. Br. Birds, part xxii.

*Aythya marila neerctica*, n. sp. (fossil), Equus Beds, Oregon ; R. W. SHUFELDT, J. Ac. Philad. ix, p. 405.

*Edemia* : notes on the American species ; G. TRUMBULL, Auk, ix, pp. 153-157. *Æ. nigra*, figured ; LORD LILFORD, Col. Fig. Br. Birds, part xxii : migration in spring ; G. H. MACKAY, Auk, ix, pp. 292-294 : nesting in Sussex ; C. FOWLER, Zool. 1892, p. 151. *Æ. fusca*, figured ; LORD LILFORD, Col. Fig. Br. Birds, part xxii.

*Erismatura australis* in Tasmania ; A. J. NORTH, Rec. Austral. Mus. ii, p. 37.

*Clangula hyemalis*, in New England ; G. H. MACKAY, Auk, ii, pp. 330-337.

*Mergus serrator*, figured ; LORD LILFORD, Col. Fig. Br. Birds, part xxi.

## Order PELECANIFORMES.

### Suborder SULÆ.

*Sula cyanops* and *S. fiber*, nesting on Adèle I. ; J. WALKER, Ibis, 1892, pp. 257 & 258.

### Suborder PHALACROCORACÆ.

#### Family PHALACROCORACIDÆ.

*Phalacrocorax carbo* and *P. graculus*, figured ; LORD LILFORD, Col. Fig. Br. Birds, part xxii. *P. gutturalis*, n. sp., Victoria Nyansa, A. REICHENOW, J. f. O. 1892, pp. 133 & 134. *P. novæ zeelandiæ*, n. var., *major* (fossil) ; H. O. FORBES, Tr. N. Z. Inst. xxiv, p. 189. *P. sulcirostris*, in Norfolk I. ; A. J. NORTH, Rec. Austral. Mus. ii, p. 38.

#### Family PLOTIDÆ.

*Plotus melanogaster* : notes on anatomy and osteology ; F. E. BEDDARD, P. Z. S. 1892, pp. 291-296.

### Suborder PELECANI.

*Pelecanus proavus*, n. sp. (fossil), Queenaland, C. W. DE Vries, P. Linn. Soc. N.S.W. (2) vi, pp. 444 & 445, figs. 6a & 6b. *P. erythrorhynchus*, in Maine ; H. MERRILL, Auk, ix, p. 292.

### Suborder FREGATI.

*Tachypetes minor* nesting on Adèle I. ; J. WALKER, Ibis, 1892, pp. 258-260.

## Order CATHARTIDIFORMES.

BENDIRE, C. Life Histories of North American Birds, with special reference to their breeding habits and eggs. U. S. Nat. Mus., Special Bulletin No. 1, Washington, 1892, 4to.

Eggs of the following species are figured :—*Pseudogryphus californianus* (pl. iv, fig. 5) ; *Cathartes aura* (pl. iv, figs. 1 & 3) ; *Catharista atrata* (pl. iv, figs. 7 & 10).

## Order ACCIPITRIFORMES.

BENDIRE, C. Life Histories of North American Birds, with special reference to their breeding habits and eggs. U. S. Nat. Mus., Special Bulletin No. i, Washington, 1892, 4to.

Eggs of the following species are figured :—*Elanoides forficatus* (pl. v, figs. 1 & 2), *Elanus leucurus* (pl. v, figs. 3 & 4); *Ictinia mississippiensis* (pl. 5, fig. 5); *Rosthramus sociabilis* (pl. v, figs. 6 & 7); *Circus hudsonius* (pl. v, figs. 8-10); *Accipiter velox* (pl. v, figs. 11-17), *A. cooperi* (pl. v, figs. 18-20), *A. atricapillus* (pl. vi, fig. 1), *A. atricapillus striatulus* (pl. vi, fig. 2); *Parabuteo unicinctus harrisi* (pl. vi, figs. 3 & 3), *Buteo borealis* (pl. vi, figs. 5 & 6), *B. borealis calurus* (pl. vi, figs. 7 & 8), *B. lineatus* (pl. vii, figs. 1-5), *B. lineatus elegans* (pl. vi, fig. 9), *B. abbreviatus* (pl. vii, fig. 6), *B. albicaudatus* (pl. vii, figs. 8 & 9), *B. swainsoni* (pl. viii, figs. 1-6), *B. latissimus* (pl. vii, figs. 10-13), *B. brachyurus* (pl. viii, fig. 7); *Urubitinga anthracina* (pl. viii, figs. 8 & 9), *Asturina plagiata* (pl. vii, fig. 7), *Archibuteo lagopus sanctijohannis* (pl. viii, figs. 10-12), *A. ferrugineus* (pl. ix, figs. 1, 2, & 4); *Aquila chrysaetos* (pl. ix, figs. 3 & 5); *Haliaetus leucocephalus* (pl. ix, fig. 7); *Falco rusticolus gyrfalco* (pl. ix, figs. 6, 8, & 9), *F. rusticolus oboletus* (pl. x, fig. 1), *F. mexicanus* (pl. x, figs. 2 & 3), *F. peregrinus anatum* (pl. x, figs. 5-7), *F. columbarius* (pl. x, figs. 4 & 8), *F. fusco-cærulescens* (pl. x, figs. 9 & 10), *F. sparverius* (pl. x, figs. 11-16); *Polyborus cheriway* (pl. xi, figs. 1-4); *Pandion haliaëtus carolinensis* (pls. x, fig. 17, & xi, figs. 5-9).

CZATÓ, J. VON. Die Verbreitung und Lebensweise der Tagraubvögel in Siebenbürgen. C.R. ii, Congr. Orn. Intern. ii, pp. 118-128.

LILFORD, LORD. Notes on Birds in the Lilford Aviaries. J. Northampt. Soc. v, pp. 258-269.

[*Haliaetus albicilla*, *Aquila mogilnik*, *A. adalberti*, *A. ropax*, *A. nepalensis*, *A. pennata*, *Pseudaetus bonelli*, *Circæetus gallicus*, *Vultur monachus*, *Gypætus barbatus*, *Neophron perenopterus*.]

MEARNS, E. A. A Study of the Sparrow Hawks (Subgenus *Tunnunculus*) of America, with especial reference to the Continental species (*Falco sparverius*, Linn.). Auk, ix, pp. 252-270.

[See *Falconidæ*, p. 39.]

QUELCH, J. J. Our [British Guiana] Birds of Prey. Journ. R. Agr. & Comm. Soc. Brit. Guian. (2) vi, pp. 117-162.

## Family VULTURIDÆ.

*Neophron pileatus* : skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. cli.

## Family FALCONIDÆ.

## Subfamily POLYBORINÆ.

*Polyborus cheriway* : egg and chick ; A. DUGÈS, Nat. Mex. (2) ii, pp. 173 & 174, pl. ix.

*Ibycter chimango* : skeleton figured ; A. B. MEYER, Abbild. Vögel. Skel., Taf. cliii.

## Subfamily ACCIPITRINÆ.

*Circus cyaneus*, figured ; LORD LILFORD, Col. Fig. Br. Birds, part xxi.

*C. hamiltoni* and *C. teautensis*, n. spp. (subfossil), New Zealand ; H. O. FORBES, Tr. N. Z. Inst. xxiv, p. 186.

*Astur brevipes*, notes on ; N. v. SSOMOW, Orn. Jahrb. iii, pp. 179-182.

*Melierax polyzonus* : skeleton figured ; A. B. MEYER, Abbild. Vögel. Skel., Taf. clix.

## Subfamily BUTEONINÆ.

*Busarellus nigricollis* : skeleton figured ; A. B. MEYER, Abbild. Vögel. Skel., Taf. cliv.

*Buteo borealis calurus* in Cuba ; F. M. CHAPMAN, Bull. Am. Mus. iv, p. 294. *B. albicaudatus colonus*, n. subsp., Curaçao ; H. VON BERLEPSCH, J. f. O. 1892, pp. 89-91.

## Subfamily AQUILINÆ.

*Necrastur*, n. g. Type *N. alacer* (fossil), Queensland ; C. W. DE VIS, P. Linn. Soc. N.S.W. (2) vi, pp. 437-439, pl. xxiv, figs. 1a, 1b.

*Aquila hypogæa*, n. sp. (fossil) ; A. MILNE-EDWARDS, C.R. ii, Congr. Orn. Intern. ii, pp. 60 & 61. *A. pliogryps*, n. sp. (fossil), and *A. sodalis*, n. sp. (fossil), Equus Beds, Oregon, R. W. SHUFFELDT, J. Ac. Philad. ix, pp. 416-418. *A. rapax*, in Astrachan ; A. B. MEYER, Abb. Ges. Isis, 1892, pp. 67-71 : notes on *A. bocki*, *id. t. c. A. nævia*, in Essex ; MILLER CHRISTY, Zool. 1892, p. 76.

*Spizaetus coronatus*, skeleton figured ; A. B. MEYER, Abbild. Vögel. Skel., Taf. clvi.

*Nisaetus fuscatus*, skeleton figured, *id. t. c.* Taf. clv.

*Spilornis rufipectus*, skeleton figured, *id. t. c.* Taf. clvii.

*Circæetus gallicus*, in Bohemia, F. v. FISKAL, Orn. Jahrb. iii, pp. 173 & 174 : in the Forest of Andaine (Orne) ; Abbé LETACQ, Bull. Soc. L. Norm. vi, pp. 180-183.

*Haliaetus albicilla* : notes on ; V. RITTER VON TSCHUSI ZU SCHMID-HOFFEN, Orn. Jahrb. iii, pp. 74-76 : figured, E. H. GIGLIOLI & A. MANZELLA, Iconogr. Avif. Ital. part xlix.

*Gypohierax angolensis*, skeleton figured ; A. B. MEYER, Abbild. Vögel. Skel., Taf. clii.

*Milvus migrans*, figured ; E. H. GIGLIOLI & A. MANZELLA, Iconogr. Avif. Ital. part xlvii.

## Family FALCONIDÆ.

- Pernis apivorus*, in co. Wexford ; E. WILLIAMS, Zool. 1892, p. 428.
- Baza lophotes* : notes on its nest and eggs ; T. A. HAUXWELL, J. Bomb. N. H. Soc. viii, pp. 403 & 404.
- Falco peregrinus*, from Pappan I., N. W. Borneo, R. B. SHARPE, Bull. B. O. C. ii, p. iv. *F. peregrinus anatum*, skeleton figured ; A. B. MEYER, Abbild. Vögel. Skel., Taf. clviii. *F. barbarus* and *F. punicus*, figured ; E. H. GIGLIOLI & A. MANZELLA, Iconogr. Avif. Ital., parts. xlvii & xlviii. *F. rusticolus obsoletus*, in Rhode I. ; A. O'D. TAYLOR, Auk, ix, pp. 300 & 301.
- Gennaia saker* and *G. feldeggii*, figured ; E. H. GIGLIOLI & A. MANZELLA, Iconogr. Avif. Ital., part xlviii.
- Hierofalco candicans*, in Achill ; R. M. BARRINGTON, Zool. 1892, p. 77.
- Falco cenchris*, figured ; LORD LILFORD, Col. Fig. Br. Birds, part xxii.
- Falco tinnunculus* × *F. asalon* ; GEORGE BOLAN, Naturalist, 1892, pp. 369 & 370. *F. sparveriioides* : notes on ; F. M. CHAPMAN, Bull. Am. Mus. iv, pp. 294-296. *F. sparverius deserticolus*, n. subsp., Arizona ; E. A. MEARN, Auk, ix, p. 263. *F. sparverius peninsularis*, n. subsp., Lower California, *id. t. c.* p. 267. *F. sparverius australis*, n. subsp., S. America, *id. t. c.* p. 269. *F. sparverius equatorialis*, n. subsp., Guayaquil, Ecuador, *id. t. c.* p. 269. *F. sparverius brevipennis*, n. subsp., Curaçao ; H. VON BERLEPSCH, J. f. O. 1892, pp. 91-95.

## Suborder PANDIONES.

- Pandion haliaetus*, figured ; E. H. GIGLIOLI & A. MANZELLA, Iconogr. Avif. Ital., part xlvii : formerly nesting in the Lake District of England ; A. G. MORE, Zool. 1892, pp. 1-3 : breeding on Plum I., N. Y. ; C. S. ALLEN, Auk, ix, pp. 313-321, pls. iv & v.

## Order STRIGES.

BENDIRE, C. Life Histories of North American Birds, with special reference to thier breeding habits and eggs. Washington : 1892, 4to, viii & 414 pp., pls. i-xii.

The eggs of the following species are figured :—*Strix pratincola* (pl. xii, fig. 1) ; *Asio wilsonianus* (pl. xii, fig. 2), *A. accipitrinus* (pl. xii, fig. 3) ; *Syrnium nebulosum* (pl. xii, fig. 4) ; *Scotiaptex cinerea* (pl. xii, fig. 5) ; *Nyctala tengmalmi richardsoni* (pl. xii, fig. 6), *N. acadica* (pl. xii, fig. 7) ; *Megascops asio* (pl. xii, fig. 8), *M. asio mazwelliæ* (pl. xii, fig. 10), *M. asio trichopsis* (pl. xii, fig. 11), *M. asio macfarlanei* (pl. xii, fig. 9), *M. flammeolus* (pl. xii, fig. 15) ; *Bubo virginianus* (pl. xii, fig. 12) ; *Nyctea nyctea* (pl. xii, fig. 19) ; *Surnia ulula cuparoch* (pl. xii, fig. 18) ; *Speotyto cunicularia hypogæa* (pl. xii, fig. 14), *S. cunicularia floridana* (pl. xii, fig. 16) ; *Glauclidium phalænoides* (pl. xii, fig. 17) ; *Micropallas whitneyi* (pl. xii, fig. 13).

- Bubo maximus*, figured; E. H. GIGLIOLI & A. MANZELLA, Iconogr. Avif. Ital., part xlvii. *B. incertus*, n. sp. (fossil), Eocene of S. France; A. MILNE-EDWARDS, C. R. ii, Congr. Orn. Intern. ii, pp. 63 & 64.
- Necrobyas harpax*, n. sp. (fossil), and *N. rosignoli*, n. sp. (fossil), Eocene of France, *id. t. c.* pp. 61-63.
- Megascops flummeolus idahoensis*, figured: C. H. MERRIAM, Auk, ix, pp. 169-171, pl. ii.
- Scops menadensis*, skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxi, fig. 2. *S. mantananensis*, n. sp., Mantanani I., N. W. Borneo; R. B. SHARPE, Bull. B. O. C., No. 2, p. iv. *S. brookii*, n. sp., Mt. Dulit, Borneo, *id. ibid.*
- Nyctea ulula*, in Austrian Silesia; E. URBAN, Orn. Jahrb. iii, p. 122.
- Asio accipitrinus*, increase of nests in vole-stricken districts of Scotland; P. ADAIR, Ann. Scott. N. H. i, pp. 219-231.
- Otus (potius Asio) henrici*, n. sp. (fossil), Eocene of S. France, A. MILNE-EDWARDS, C.R. ii, Congr. Orn. Intern. ii, p. 63.
- Carine noctua*, in Oxfordshire; O. V. APLIN, Zool. 1892, p. 332.
- Athene noctua plumipes*, skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clx, fig. 2.
- Ninox connivens*, egg figured; A. J. NORTH, Rec. Austral. Mus. ii, pl. ii, fig. 1.
- Speotyto cunicularia bahamensis*, = *S. cunicularia floridanus*; C. B. CORY, Cat. W. Ind. Birds, p. 140. *S. cunicularia floridana*, its breeding habits; S. N. RHODES, Auk, lx, pp. 1-8.
- Syrnium occidentale*: notes on; F. STEPHENS, Auk, ix, pp. 392 & 393. *S. aluco*, figured; A. H. GIGLIOLI & A. MANZELLA, Iconogr. Avif. Ital., part xlvii.
- Strix flammea bargei*, n. subsp., Curaçao I.; E. HARTERT, Bull. B. O. C., No. 3, p. xiii.

## Order CORACIIFORMES.

### Suborder STEATORNITHES.

- HARTERT, E. Catalogue of the *Picariæ* in the Collection of the British Museum. Coraciæ, Fam. *Steatornithidæ*. [Vol. xvi of The Catalogue of Birds.] London: 1892, 8vo, pp. 653 & 654.

### Suborder PODARGI.

- HARTERT, E., *ut supra*: Fam. *Podargidæ*, pp. 629-636 & 652, pl. xiv.
- Podargus strigoides*, remarks on; W. SAVILLE KENT, P. Z. S. 1892, p. 477.
- Batrachostomus harterti*, n. sp., Mt. Dulit, N. W. Borneo; R. B. SHARPE, Ibis, 1892, p. 323: figured, E. HARTERT, Cat. Birds, xvi, pl. xiv. *B. poliolophus*, n. sp., W. Sumatra; E. HARTERT, Notes Leyd. Mus. xiv, p. 63. *B. mixtus*, n. sp., Mt. Dulit, N. W. Borneo; R. B. SHARPE, Bull. B. O. C., No. 2, p. iv.
- Egotheles salvadorii*, n. sp., S. E. New Guinea; E. HARTERT, Cat. Birds, xvi, p. 649.

## Suborder CORACIÆ.

## Family CORACIIDÆ.

SHARPE, R. B. Catalogue of the *Picariæ* in the Collection of the British Museum. Coraciæ and Halcyones. *Coraciidæ*. [Vol. xvii of The Catalogue of Birds.] 1892, pp. 4–40, pls. ii & iii.

*Geranopterus*, n. g. Type, *G. elutus*, n. sp. (fossil), Eocene of S. France; A. MILNE-EDWARDS, C.R. ii, Orn. Congr. Intern. ii, p. 66.

*Coracias olivaceiceps*, n. sp. [nom. emend. pro *C. mosambicus*, Dresser]; R. B. SHARPE, *t. c.* p. 25. *C. garrula*, in Ireland; R. L. PATTERSON, *Ibis*, 1892, p. 181: in Caithness; L. DUNBAR, *Ann. Scott. N. II.* i, p. 136.

*Eurystomus orientalis* (pl. ii, fig. 1), *E. calonyx* (pl. ii, fig. 2), *E. solomonensis* [Zool. Rec. xxvii, *Aves*, p. 38] (pl. iii, fig. 1), *E. azureus* (pl. iii, fig. 2), figured; R. B. SHARPE, *ut suprâ*. *E. afer*, n. var. *rufobuccalis*, Uganda; A. REICHENOW, *J. f. O.* 1892, p. 27.

## Suborder LEPTOSOMATI.

## Family LEPTOSOMATIDÆ.

SHARPE, R. B. Catalogue of the *Picariæ* in the Collection of the British Museum. Coraciæ and Halcyones. *Leptosomatidæ*. [Vol. xvii of The Catalogue of Birds.] 1892, pp. 1–3.

## Suborder HALCYONES.

## Family ALCEDINIDÆ.

SHARPE, R. B. Catalogue of the *Picariæ* in the Collection of the British Museum. Coraciæ and Halcyones. *Alcedinidæ*. [Vol. xvii of The Catalogue of Birds.] 1892, pp. 93–312.

## Subfamily ALCEDININÆ.

*Ceryle septentrionalis*, n. subsp., nom. emend. pro *C. cabanisi* (auct., nec Tschudi), S. United States to Panama; *id. t. c.* pp. 134–136. *C. æquatorialis*, n. sp., Ecuador, *id. t. c.* p. 140, pl. iv, fig. 1. *C. stictoptera*, figured; *id. t. c.* pl. iv, fig. 2.

*Alcedo floresiana*, n. subsp., Flores; *id. t. c.* p. 151. *A. guentheri*, n. sp., W. Africa, *id. t. c.* pl. iv, fig. 2. Distinct from *A. quadribrachys*, (pl. iv, fig. 1), *id. t. c.* pp. 156 & 157. *A. ispida*: nesting habits; R. SCOBIE, *P. N. H. Soc. Glasg. (n.s.)* iii, p. 255.

## Subfamily DACEONINÆ.

*Ceyx euerythra*, n. sp., Malaisia; R. B. SHARPE, *Cat. B. Brit. Mus.* xvii, p. 179. *C. sumarensis* [Zool. Rec. xxvii, *Aves*, p. 38] = *C. melanura*; *id. t. c.* p. 180. *C. sulaensis* [Zool. Rec. xxvii, *Aves*, p. 38] = *C.*



*malamaui* [Zool. Rec. xxvii, *Aves*, p. 38], *id. t. c.* p. 184. *C. margarethæ* [Zool. Rec. xxvii, *Aves*, p. 38] = *C. bournsii* [Zool. Rec. xxvii, *Aves*, p. 38]; *id. t. c.* p. 185. *C. steerii*, n. sp., Mindoro, *id. t. c.* p. 187.

*Halcyon torquatus* (pl. vi, fig. 1), *H. forbesi*, n. sp., Sierra Leone (pl. vi, fig. 2), *H. malimbicus* (pl. vi, fig. 3) : heads figured; R. B. SHARPE, *t. c.* pp. 246 & 247, pl. vi. *H. admiralitatis*, n. sp., Admiralty Is., *id. t. c.* p. 251. *H. rufigularis*, n. subsp., hab. ignot., *id. t. c.* p. 260. *H. mediocris*, n. subsp., Ponapé, *id. ibid.* *H. tutuilæ*, n. sp., Tutuila, *id. t. c.* p. 266. *H. tannensis*, n. sp., Tanna I., *id. ibid.* *H. chloris* : head figured; *id. t. c.* pl. vii, fig. 3. *H. armstrongi*, n. subsp., Burmah, *id. t. c.* p. 277, pl. vii, fig. i. *H. vidali*, n. subsp., S. Konkani, *id. t. c.* p. 278. *H. solomonis*, head figured; *id. t. c.* pl. vii, fig. 2. *H. suvensis*, n. sp., Suva I., *id. t. c.* p. 281. *H. humii*, n. sp., Malacca, *id. t. c.* p. 281, pl. viii. *H. meyeri*, n. subsp., Togian Is., *id. t. c.* p. 282. *H. davisoni*, n. subsp., Andamans, *id. t. c.* p. 282. *H. (Cyanalcyon) quadricolor*, figured; E. OUSTALET, N. Arch. Mus. (2) (3) iv, pl. xiv.

*Todirhamphus youngi*, n. sp., Morea I., p. 289; R. B. SHARPE, *ut supra*, p. 289.

#### Suborder BUCEROTES.

##### Family BUCEROTIDÆ.

OGILVIE-GRANT, W. R. Catalogue of the *Picariæ* in the Collection of the British Museum. Coraciæ and Halcyones. *Bucerotidæ*. [Vol. xvii of The Catalogue of Birds.] 1891, pp. 347-428, pls. xiii & xiv.

*Buceros exaratus* : skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxix.

*Gymnolæmus*, n. g. Type, *G. marekii*, W. R. OGILVIE-GRANT, *t. c.* p. 370.

*Ptilolæmus*, n. g. Type, *P. tickelli*; *id. t. c.* p. 392.

*Lophoceros damarensis*, figured; *id. t. c.* p. 411, pl. xiv. *L. flavirostris*, *id. t. c.* p. 412, *L. leucomelas*, p. 414, and *L. elegans*, p. 415 : tails figured; *id. t. c.* p. 413. *L. jacksoni* [Zool. Rec. xxviii, *Aves*, p. 49], figured; *id. t. c.* p. 416.

*Ortholophus*, n. g. Type, *O. albocristatus*; *id. t. c.* p. 424.

*Teckus gingalensis* : nest and eggs; F. LEWIS, J. A. S. (Ceylon) xii, pp. 63-65.

#### Suborder UPUPÆ.

SALVIN, O. Catalogue of the *Picariæ* in the Collection of the British Museum. Upupæ. [Vol. xvi of The Catalogue of Birds.] 1892, pp. 1-26, pls. i-iii.

##### Family UPUPIDÆ.

5 species recognized; O. SALVIN, *ut supra*. *U. somalensis*, n. sp., Somaliland, *id. t. c.* p. 13, pl. i.

## Family IRRISORIDÆ.

3 genera recognized : *Irrisor*, *Scoptelus*, and *Rhinopomastus* ; O. SALVIN, *t. c.* pp. 16-26.

*Irrisor bollii* (pl. ii), and *I. jacksoni* [Zool. Rec. xxvii, *Aves*, p. 39], pl. iii, fig. 1, figured ; *id. t. c.*

*Scoptelus castaneiceps*, figured ; *id. t. c.* pl. iii, fig. 2. *S. anchietæ*, n. sp., Benguela, J. v. BARBOZA DU BOCAGE, J. Sci. Lish. (2) No. viii, p. 254.

## Suborder MEROPES.

## Family MEROPIDÆ.

SHARPE, R. B. Catalogue of the *Picariæ* in the Collection of the British Museum. Coraciæ and Halcyones. *Meropidæ*. [Vol. xvii of The Catalogue of Birds.] 1892, pp. 41-92, pl. i.

*Dicrocercus furcatus* (pl. i, fig. 2), distinct from *D. hirundineus* (pl. i, fig. 1): both species (heads) figured ; *id. t. c.* pp. 42-44.

*Melittophagus meridionalis*, n. sp. (pl. i, fig. 4), distinct from *M. pusillus* (pl. i, fig. 5), and *M. cyanostictus* (pl. i, fig. 3) : heads of all 3 species figured ; *id. t. c.* pp. 45-48. *M. oreobates*, n. sp., Mt. Elgon, E. C. Africa ; *id. Ibis*, 1892, pp. 320 & 321.

*Merops apiaster*, in Moravia ; J. TALSKÝ, Orn. Jahrb. iii, p. 195 : in co. Wicklow ; E. WILLIAMS, Zool. 1892, p. 428. *M. philippinus*, skeleton figured ; A. B. MEYER, Abbild. Vögel Skel., Taf. clxii, fig. 1.

## Suborder MOMOTI.

## Family MOMOTIDÆ.

SHARPE, R. B. Catalogue of the *Picariæ* in the Collection of the British Museum. Coraciæ and Halcyones. *Momotidæ*. [Vol. xvii of The Catalogue of Birds.] 1892, pp. 313-332.

*Momotus parensis*, n. sp., Para ; *id. t. c.* p. 320. *M. bartletti*, n. sp., Colombia to Upper Amazonia ; *id. t. c.* pp. 320 & 321, pl. ix. *M. subrufescens*, figured ; *id. t. c.* pl. x, fig. i. *M. microstephanus* figured ; *id. t. c.* pl. x, fig. 2. *M. æquatoriulus*, figured ; *id. t. c.* pl. xi. *M. venezuelæ*, n. sp., Venezuela ; *id. t. c.* p. 321.

*Aspatha*, n. g. Type, *A. gularis* (Lafresn.) ; *id. t. c.* p. 331.

## Suborder TODI.

## Family TODIDÆ.

SHARPE, R. B. Catalogue of the *Picariæ* in the Collection of the British Museum. Coraciæ and Halcyones. *Todidæ*. [Vol. xvii of The Catalogue of Birds.] 1892, pp. 333-337.

## Suborder CAPRIMULGI.

HARTERT, E. Notes on the *Caprimulgidæ*. *Ibis*, 1892, pp. 274-288, pl. vi. *Caprimulgus europæus* and its allies; *id. t. c.* pp. 277-279. *C. tristigma*, Rüpp., = *C. lentiginosus*, Smith; *id. t. c.* p. 279. *C. eximius*, figured; *id. t. c.* pp. 279 & 280, pl. vi. *C. asiaticus*: notes on; *id. t. c.* p. 280. *C. arundinaceus*, Jacq. & Pucher, and *C. faberi*, Meyer, = *C. affinis*, *id. t. c.* pp. 280 & 281. *C. salvadorii*, Sharpe, = *C. macrurus*, of which *C. albonotatus* is only a race; *id. t. c.* pp. 281-283. *C. keluarti* is a race of *C. jotaka*; *id. t. c.* pp. 283-285. *C. melanopogon*, Salvad., = *C. jotaka*; *id. t. c.* p. 285. *C. concretus*: notes on; *id. t. c.* p. 285.

*Antrostomus*, = *Caprimulgus*; *id. t. c.* p. 286. *A. vociferus*, *arizonæ*, *vocifer*, = *C. macromystax*, Wagl.; *id. t. c.* p. 286. *C. salvini*, n. sp. (= *C. macromystax*, auct., nec Wagl.) *id. t. c.* p. 287.

*Scotornis nigricans*, = *S. climacurus*; *id. t. c.* pp. 287 & 288.

HARTERT, E. Catalogue of the *Picariæ* in the Collection of the British Museum. Coraciæ. Family *Caprimulgidæ*. [Vol. xvi of The Catalogue of Birds.] 8vo, pp. 519-652, pls. xi-xiii.

*Caprimulgus griseatus*, figured; *id. t. c.* pl. xi. *C. whiteleyi*, n. sp., Roraima; *id. t. c.* pp. 573 & 574, pl. xii. *C. clarus*, n. sp., Uganda; A. REICHENOW, Ber. Allg. Deutschl. Orn. Ges., Jan. 1892, p. 1; *id. J. f. O.* p. 29. *C. europæus*, figured; LORD LILFORD, Col. Fig. Br. Birds, part xxii; E. H. GIGLIOLI & A. MANZELLA, Iconogr. Avif. Ital. pt. 1.

*C. ruficollis* and *C. asiaticus*, figured; *id. t. c.* pt. 1.

*Lyncornis mindanensis*, figured; E. HARTERT, *t. c.* pl. xiii.

## Suborder CYPSELLI.

HARTERT, E. Catalogue of the *Picariæ* in the Collection of the British Museum. Coraciæ. Family *Cypselidæ*. [Vol. xvi of The Catalogue of Birds.] London: 1892, pp. 434-518, pl. x.

*Micropus africanus*, distinct from *M. apus*; *id. t. c.* pp. 440 & 441.

*Aeronautes*, n. g. Type, *A. melanoleucus*; *id. t. c.* pp. 459 & 460.

*Claudia*, n. g. Type, *C. squamata*; *id. t. c.* pp. 469 & 470.

*Chetura guianensis*, n. subsp., Guiana; *id. t. c.* p. 486. *C. ussheri*, figured; *id. t. c.* pl. x.

*Collocalia merguensis*, n. subsp., Tenasserim; *id. t. c.* p. 506.

[See RIDGWAY, R., *Am. Nat.* xxvi, pp. 1040 & 1041; SHUFELDT, R. W., *t. c.* pp. 869 & 870.]

*Cypselus affinis*, figured; E. H. GIGLIOLI & MANZELLA, Iconogr. Avif. Ital. pt. xlviii.

*Collocalia* in the Andaman Is.; [Anon.] *Ibis*, 1892, pp. 578 & 579.

*Tachyornis*, n. g. Type, *T. hirundo*, n. sp. (fossil), Eocene of S. France; A. MILNE-EDWARDS, C.R. ii, Congr. Orn. Intern. ii, pp. 66 & 67.

[*Ægiolornis* (Zool. Rec. xxviii, *Aves*, p. 39) is identical; *id. t. c.*]

## Suborder TROCHILL.

Food : BOLLES, F., Science, xx, p. 318, and GIBBS, M., t. c. p. 329.

BOUCARD, A. Genera of Humming Birds, pp. 1-56, 8vo [published in the 'Humming Bird,' ii, Jan.-July, 1892].

*Lophornis hauxwelli*, n. sp., Nauta. id. t. c. p. 37.

—. A complete list up to date of the Humming Birds found in Columbia, with descriptions of several supposed new species. T. c. pp. 73-87.

The following species are supposed to be new :—*Heliodoxa berlepschi*, n. sp., *Heliotrypha simoni*, n. sp., *Helianthus rothschildi*, n. sp., *Eriocnemis albigularis*, n. sp., *Chlorostilbon speciosa*, n. sp., *Saucerottia nunesi*, n. sp., *Uranomitra colombiana*, n. sp., *Phaethornis panamensis*, n. sp., *Homophania lawrencii*, n. sp.

RIDGWAY, R. The Humming Birds. Rep. U.S. Nat. Mus. 1890, pp. 253-383, pl. xlv, and 47 cuts in the text. A review of the family of Trochilidae, with special reference to the species of the United States. T. c. pp. 255-292.

Notes on the anatomy, by F. A. LUCAS.

[See also Am. Nat. xxvi, pp. 1040 & 1041.]

SALVIN, O., & GODMAN, F. D. Biologia Centrali-americana., Aves, Vol. ii, pp. 249-366.

The following species are figured :—*Oreopyra calolæma* (pl. liv, figs. 1 & 2) ; *Delatiria hemileuca* (pl. liv, figs. 3 & 4), *D. margarethæ* and *D. sybillæ* (pl. livA) ; *Hemistephania veraguensis* (pl. lv, fig. 1) ; *Hypuroptila* (s. n. *Chalybura*) *melanorrhœa* (pl. lv, figs. 2 & 3) ; *Callipharus* (s. n. *Eupherusa*) *nigriventris* (pl. lvii, figs. 3 & 4) ; *Selasphorus torridus* and *S. ardens* (pl. lvi) ; *Lophornis adorabilis* (pl. lvii, figs. 1 & 2).

SALVIN, O. Catalogue of the Picariæ in the Collection of the British Museum. [Vol. xvi of The Catalogue of Birds.] Trochili, pp. 27-433, pls. iv-ix.

*Panychlora micans*, n. sp., hab. ?, id. t. c. p. 71, pl. iv, fig. 1.

*Chlorostilbon peruanus*, figured ; id. t. c. pl. iv, fig. 2.

*Neolesbia*, n. g. Type, *N. nehrkornæ* ; id. t. c. p. 145.

*Helianthus laticlavus*, Ecuador, id. t. c. p. 160, and *H. violicollis*, n. spp., p. 162, pl. v, figs. 1 & 2.

*Heliotrypha barrali* and *H. speciosa*, n. sp., Colombia?, figured, id. t. c. pl. vi, figs. 1 & 2.

*Iolæma luminosa*, figured ; id. t. c. pl. viii, fig. 1.

*Phæolæma cernigularis*, n. sp., Ecuador?, id. t. c. p. 325, pl. viii, fig. 2.

*Eriocnemis ventralis*, n. sp., Colombia, id. t. c. p. 364, pl. ix, fig. 2. *E. dyselius* figured ; id. t. c. pl. ix, fig. 1.

*Agrytria cæruleiceps*, figured ; id. t. c. pl. vii, fig. 1.

*Amazilia sumichrasti*, n. sp., S. Mexico, id. t. c. p. 213, pl. vii, fig. 2.

- Polycrata decora*, n. sp., Chiriqui, *id. t. c.* p. 238.  
*Oreopyra pectoralis*, n. sp., Costa Rica, *id. t. c.* p. 308.  
 See SHUFELDT, R. W., *Am. Nat.* xxvi, pp. 869 & 870; *Nature*, xlii, p. 465.  
*Cyanolesbia emma*, n. sp., Colombia, H. VON BERLEPSCH, *Ber. Allg. Deutsch. Orn. Ges.*, Dec. 1892, p. 10. *C. caudata*, n. sp., Venezuela, *id. t. c.* p. 12.  
*Delattria sybillæ*, n. sp., Nicaragua, O. SALVIN & F. D. GODMAN, *Ibis*, 1892, p. 327.  
*Cyanomyia guerrerensis*, n. sp., Guerrero, *id. t. c.* p. 290; *id.*, *Biol. Centr.-Am. Aves.* ii.  
*Phaethornis rufurumii*, n. sp., British Guiana, A. BOUCARD, *Humming Bird*, ii, p. 1.

## Suborder COLII.

## Family COLIIDÆ.

- SHARPE, B. B. *Catalogue of the Picariæ in the Collection of the British Museum. Coliidae.* [Vol. xvii of *The Catalogue of Birds.*] 1891, pp. 338-346, p. xii.  
*C. leucotis* (fig. 1), and *C. affinis* (fig. 2), figured; *id. t. c.* pl. xii.  
*Colius nigriscapalis*, n. sp., Cameroona, A. REICHENOW, *Ber. Allg. Deutsch. Ges.*, Feb. 1892, p. 3; *id. J. f. O.* 1892, p. 180.

## Order TROGONES.

## Family TROGONIDÆ.

- OGILVIE-GRANT, W. R. *Catalogue of the Picariæ in the Collection of the British Museum. Coraciæ and Halcyones. Trogonidae.* [Vol. xvii of *The Catalogue of Birds.*] 1891, pp. 429-497, pls. xiii-xvii.  
*Archæotrogon*, n. g. Type, *A. venustus*, n. sp. (fossil), Eocene of S. France; A. MILNE-EDWARDS, *C.R.* ii, *Congr. Orn. Intern.* ii, pp. 64-66.  
*Trogon bolivianus*, n. sp., Amazonia and Ecuador, W. R. OGILVIE GRANT, *t. c.* p. 473, pl. xv.  
*Hapaloderma vittatum*, figured; *id. t. c.* pl. xvi.  
*Harpactes vidua*, n. sp., Mt. Dulit, Borneo, *id. t. c.* p. 501. *H. dulitensis*, n. sp., Mt. Dulit, *id. t. c.* p. 502, pl. xvii.

## Order COCCYGES.

## Family CUCULIDÆ.

- Dynamopterus*, n. g. Type, *D. velox*, n. sp. (fossil); A. MILNE-EDWARDS, *C.R.* ii, *Congr. Orn. Intern.* ii, p. 64.  
*Cuculus canorus*: two eggs in a nest; V. CAPEK, *Orn. Jahrb.* iii, pp. 248-

254. *C. canorus* and *Hirundo rustica* reared in the same nest; C. WOLLEY-DOD, Ibis, 1892, pp. 524-530. *C. aurivillii*, n. sp., Cameroons, Y. SJÖSTEDT, J. f. O. 1892, p. 313.
- Cacomantis virens*: skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxxiii, fig. 2.
- Coccyzus americanus occidentalis*, in Washington; R. H. LAWRENCE, Auk, ix, pp. 393 & 394.
- Centropus phasianus*: egg described and figured; A. J. NORTH, Rec. Austral. Mus. ii, p. 17, pl. ii, fig. 4.
- Pyrrhocentor celebensis*: skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxxii.
- Guira guira*: skeleton figured; *id. t. c.* Taf. clxxi, fig. 2.

## Family MUSOPHAGIDÆ.

- CHURCH, A. H. Researches on Turacin, an animal pigment containing copper. Phil. Trans. clxxxiii, pp. 511-530.

## Order PSITTACIFORMES.

- A. L. H[FERRANO]. Sinopsis de los Psitacidos mexicanos. Nat. Mex. (2) ii, pp. 213-218.

## Family NESTORIDÆ.

- Nestor norfolcensis*: notes on a specimen; H. B. TRISTRAM, Ibis, 1892, pp. 557 & 558.

## Family CACATUIDÆ.

- Calyptorhynchus funereus* and *C. solandri*: eggs described and figured; A. J. NORTH, Rec. Austral. Mus. ii, p. 18, pl. ii, figs. 2 & 3.

## Family PSITTACIDÆ.

## Subfamily CONURINÆ.

- Conurus carolinensis*: its range and habits; A. W. BUTLER, Auk, ix, pp. 49-56: in Missouri; C. H. MERRIAM, *t. c.* p. 301. *C. rubritorques*, *Scl.*, distinct from *C. holochlorus*; T. SALVADORI, Bull. B. O. C., No. 3, p. xi. *C. arubensis*, n. sp., Aruba I., E. HARTERT, *op. cit.* No. 4, p. xvi. *C. gundlachi*, from Mona = *C. chloropterus* of San Domingo; C. CORY, Auk, ix, pp. 228 & 229.

## Subfamily PIONINÆ.

- Chrysotis hecki* = *C. lilacina* (Lees.); T. SALVADORI, Ibis, 1892, pp. 467 & 468. *C. rothschildi*, n. sp., Bonaire I., E. HARTERT, Bull. B. O. C., No. 3, p. xiii.

## Subfamily PALÆORNITHINÆ.

*Geoffroyius tjindanæ*, n. sp., Sumba I., A. B. MEYER, Notes Layd. Mus. xiv, p. 267.

*Polytelis alexandrae*: egg described and figured; A. J. NORTH, Rec. Austral. Mus. ii, p. 19, pl. 2, fig. 5.

*Loriculus stigmatus*: skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxx, fig. 1.

## Subfamily PLATYCERCINÆ.

*Platycercus erythrotis*, from Antipodes I.; H. O. FORBES, Tr. N. Z. Inst. xxiv, pp. 190-192.

*Neophema elegans*: skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxx, fig. 2.

## Order SCANSORES.

## Suborder CAPITONES.

*Pogonornychus rubrifacies*, n. sp., Kimoani, Equat. Africa; A. REICHENOW, Ber. Allg. Deutsch. Orn. Ges., Jan. 1892, p. 1: *id.* J. f. O. 1892, p. 25.

*Mesobucco eximius*, n. sp., Mt. Dulit, N. W. Borneo, R. B. SHARPE, Ibis, 1892, p. 324: figured, *id.* t. c. pl. xi.

*Trachyphonus erythrocephalus*, *T. boehmi* and *T. arnaudi*: notes on, *id.* t. c. pp. 310 & 311.

*Barbatula ugandæ*, n. sp., Uganda; A. REICHENOW, Ber. Allg. Deutsch. Orn. Ges., Jan. 1892, p. 1: *id.* J. f. O. 1892, p. 25. *B. coryphæa*, n. sp., Cameroons, *id.* Ber. Allg. Deutsch. Orn. Ges., Feb. 1892, p. 3, and J. f. O. 1892, p. 181, Tab. ii, fig. 2. *B. leucomystax*, n. sp., Sotik, E. C. Africa, R. B. SHARPE, Ibis, 1892, p. 311.

## Suborder INDICATOIRES.

*Indicator pygmæus*, n. sp., Victoria Nyanza, A. REICHENOW, J. f. O. 1892, p. 132.

## Suborder PICOI.

## Family PICIDÆ.

## Subfamily PICINÆ.

*Celeus kerri* [Zool. Rec. xxviii, *Aves*, p. 55], figured; J. GRAHAM KERR, Ibis, 1892, pl. iii.

*Brachypternus ceylonus*: eggs and nesting; F. LEWIS, J. A. S. (Ceylon) xii, pp. 63-65.

*Picus leuconotus*, in Carinthia; F. SCHULZ, Orn. Jahrb. iii, p. 203. *P. major*, in Scotland; J. A. HARVIE BROWN, Ann. Scott. N. H. i, pp. 1-17.

- Sphyrapicus varius*: young in captivity; F. BOLLES, Auk, ix, pp. 109–119.  
*Thriponax kalinowski*, figured; C. W. CAMPBELL, Ibis, 1892, pl. v; not distinct from *T. richardsi*, Tristr.; H. SEEBOHM, *t. c.* pp. 248–250: P. Z. S. 1892, p. 195: from Tau-sima, *id.* Ibis, 1892, p. 399: figured; J. IJIMA, J. Sci. Coll. Tokio, v, pl. xii.  
*Centurus bahamensis*, n. sp., Great Bahama I., Bahamas, C. CORY, Auk, ix, p. 270.  
*Campothera tullbergi*, n. sp., Cameroons, Y. SJÖSTEDT, J. f. O. 1892, pp. 313 & 314.  
*Colaptes*: remarks on the North American species; J. A. ALLEN, Bull. Am. Mus. iv, Art. ii, pp. 21–44, pl. ii.

## Subfamily PICUMINÆ.

- Picumnus obsoletus*, n. sp., Venezuela, J. A. ALLEN, Bull. Am. Mus. iv, Art. v, p. 55.

## Order EURYLÆMI.

- Calptomena hosii*, n. sp., Mt. Dulit, Sarawak, R. B. SHARPE, Ann. & Mag. N. H. (6) ix, p. 249: figured, Ibis, 1892, pl. xi.

## Order MENURÆ.

- Menura victoriae*: nest figured; A. J. CAMPBELL, C.R. ii, Congr. Orn. Intern. ii, p. 156.

## Order PASSERIFORMES.

## Section A. OSCINES.

## Family CORVIDÆ.

- Palæocorax*, n. g. Type, *Corvus moriorum*, Forbes; H. O. FORBES, Bull. B. O. C., No. 4, p. xxi.  
*Corvus præcorax*, n. sp. (fossil), Pliocene of France, see C. DÉPERET, C.R. cxiv, p. 690. *C. annectens*, n. sp. (fossil), Pliocene of Oregon, R. W. SHUFELDT, J. Ac. Philad. ix, p. 419. *C. intermedius*, remarks on; W. E. BROOKS, Ibis, 1892, p. 59.  
*Trypancorax frugilegus*: on the feathered bill; R. SERVICE, Ann. Scott. N. H. i, pp. 218 & 219.  
*Nucifraga caryocatactes*: breeding in East Prussia; E. HARTERT, Ibis, 1892, p. 370.  
*Garrulus glandarius*: migration in Belgium; E. DE SÉLYS-LONGCHAMPS, C.R. ii, Congr. Orn. Intern. ii, p. 178.  
*Aphelocoma californica*, in Washington; R. H. LAWRENCE, Auk, ix, p. 301.  
*Cyanocorax cyanopogon*: skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clx, fig. 1.  
 1892. [VOL. XXIX.]



- Perisoreus canadensis*, in Massachusetts; R. O. MORRIS, *Ank.* ix, p. 395.  
*Crypsirhina nigra*, n. sp., Hainan, F. W. STYAN, *Bull. B. O. C.*, No. 2,  
 p. vi [? = *Temnurus truncatus*, R. B. SHARPE, *op. cit.* No. iv, p. xi.]  
*Pyrrhonorax primigenius* (fossil), in France; E. RIVIÈRE, *C.R. Ass. Fr. Sci.* xx, p. 400.

#### Family PARADISEIDÆ.

- Ptilorhis victoriæ*: nest and egg; A. J. CAMPBELL, *Vict. Nat.* viii, pp. 134 & 135.  
*Paradisea raggiana*: nest and egg; P. CROWLEY, *Bull. B. O. C.*, No. 4, p. xvi (3), v, pp. 218-220, pl. xv.  
*Craspedophora mantoui*, figured; E. OUSTALET, *N. Arch. Mus.*  
*Diphyllodes chrysoptera septentrionalis*, n. subsp., N. E. New Guinea; A. B. MEYER, *J. f. O.* 1892, pp. 260-262.  
*Manucodia comrii*: nest and egg described; A. J. NORTH, *Rec. Austral. Mus.* ii, p. 32.

#### Family PTILONORHYNCHIDÆ.

- Amblyornis subalaris*: plan of its bower; C. W. DE VIS, *Ann. Report Brit. New Guinea*, 1890-91, App. cc, p. 95, cum fig.  
*Chlamydodera cerviniventris* and *C. maculata*: notes on eggs; P. CROWLEY, *Bull. B. O. C.*, No. 4, p. xvi.

#### Family STURNIDÆ.

- KOEPERT, O. *Der Star (Sturnus vulgaris) in volkswirtschaftlicher und biologische Beziehung.* Altenburg: 1892, 115 pp.  
*Sturnus vulgaris*, figured; LORD LILFORD, *Col. Fig. Br. Birds*, part xxii.

#### Family EULABETIDÆ.

- Acridotheres torquatus*, n. sp., Pahang, E. Malay Archipelago; W. R. DAVISON, *Ibis*, 1892, pp. 102 & 103: is an *Æthiops*; R. B. SHARPE, *Bull. B. O. C.*, No. 2, p. vii.  
*Calornis enganensis*, n. sp., I. of Engano; T. SALVADORI, *Ann. Mus. Genov.* (2) xii, p. 137.  
*Onychognathus preussi*, n. sp., Cameroons; A. REICHENOW, *Ber. Allg. Deutsch. Ges.*, Feb. 1892, p. 4; *id.* *J. f. O.* 1892, p. 184.  
*Gracula enganensis*, n. sp., I. of Engano; T. SALVADORI, *Ann. Mus. Genov.* (2) xii, pp. 137 & 138.

#### Family PARAMYTHIDÆ.

- Paramythia*, n. g. Type, *P. montium*, n. sp., Mt. Suckling, S. E. New Guinea; C. W. DE VIS, *Ann. Rep. Brit. New Guinea*, App. cc, p. 95.

## Family DICEURIDÆ.

*Chibia bracteata*, in Tasmania : W. V. LEGGE, P. R. Soc. Tasm. 1888, pp. xix, xx & pp. 93-94 (1889).

## Family ORIOLIDÆ.

*Oriolus hosii*, n. sp., Mt. Dulit, Borneo ; R. B. SHARPE, Bull. B. O. C., No. 2, p. iv.

*Oriolus celebensis* : skeleton figured ; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxvi, fig. 1.

## Family ICTERIDÆ.

*Quiscalus* : notes on the species ; F. M. CHAPMAN, Bull. Am. Mus. iv, pp. 1-16, pl. i.

*Ptiloxena*, n. g. Type, *P. atroviolacea*, of Cuba ; *id. t. c.* p. 307.

*Scolecophagus affinis*, n. sp. (fossil), Equus Beda, Oregon ; R. W. SHUFELDT, J. Ac. Philad. ix, pp. 418 & 419.

*Dives kalinowskii*, n. sp., Ica, Peru ; H. VON BERLEPSCH & J. STOLZMANN, P. Z. S. 1892, p. 378.

*Molothrus occidentalis*, n. sp., Lima, Peru ; *id. t. c.* p. 378. *M. ater*, in Mexico ; A. DUGÈS, Nat. Mex. (2) ii, pp. 103-106. *M. robustus*, parasitic on *Buarremon gutturalis* ; G. K. CHERRIE, Auk, ix, pp. 25-27.

## Family PLOCEIDÆ.

## Subfamily VIDUINÆ.

*Cryptospiza reichenowi* : ♂ described ; A. REICHENOW, J. f. O. 1892, p. 187. *C. salvadorii*, n. sp., Shoa ; *id. Ber. Allg. Deutsch. Ges.*, Feb. 1892, p. 6.

*Hypocheru* : notes on the species ; *id. J. f. O.* 1892, p. 49.

*Munia sinensis* : notes on ; J. BÜTTIKOFER, Notes Leyd. Mus. xiv, p. 132. *M. nisoria* and its allies ; *id. t. c.* pp. 202-204.

*Estrela roseicrissa*, n. sp., Bukoba, Victoria Nyanza ; A. REICHENOW, Ber. Allg. Deutsch. Orn. Ges., Feb. 1892, p. 7 ; *id. J. f. O.* 1892, p. 47.

## Subfamily PLOCEINÆ.

*Symplectes croconotus* and *S. tephronotus*, n. spp., Cameroons ; A. REICHENOW, Ber. Allg. Deutsch. Orn. Ges., Feb. 1892, p. 4 ; *id. J. f. O.* 1892, p. 186. *S. melanogaster*, ♂ described ; *id. J. f. O.* 1892, p. 185. *S. preussi*, n. sp., Cameroons ; *id. t. c.*, Sept. 1892, p. 6.

*Malimbus* : notes on species in Liberia ; J. BÜTTIKOFER, Notes Leyd. Mus. xiv, pp. 24-28. *M. rachilia* : female described ; Y. Sjöstedt, J. f. O. 1892, p. 313.

## Family TANAGRIDÆ.

- Euphonia* : notes on the Costa Rican species, with 'Key'; G. K. CHERRIE, *Auk*, ix, pp. 23-25.
- Rhamphocelus costaricensis*, n. sp., Costa Rica; *id.* *An. Mus. Costa Rica*, iii, p. 135. *R. atroseiceus capitalis*, n. subsp., Venezuela; J. A. ALLEN, *Bull. Am. Mus.* iv, Art. v, p. 51.
- Saltator immaculatus*, n. sp., Lima, Peru; H. VON BERLEPSCH & J. STOLZMANN, *P. Z. S.* 1892, p. 375.
- Pyranga testacea techudii*, n. subsp., Lima, Peru; *id.* *t. c.* p. 375.

## Family CÆREBIDÆ.

- Cæreba bartolemica* and allies : notes on; C. B. CORY, *Cat. W. Ind. Birds*, pp. 154 & 155. *C. uropigialis*, n. sp., Curaçao; H. VON BERLEPSCH, *J. f. O.* 1892, pp. 77-81.

## Family DREPANIDÆ.

- Hemignathus obscurus*, *H. olivaceus*, *H. procerus*, *H. hanapepe*, figured; S. B. WILSON & A. H. EVANS, *Av. Haw.* part iii.
- Vestiaria coccinea* : skeleton figured; A. B. MEYER, *Abbild. Vögel. Skel.*, Taf. clxiii, fig. 2.
- Himatione fraithii*, n. sp., Laysan I., Sandwich Group, W. ROTHSCILD, *Ann. & Mag. N. H.* (6) x, p. 109. *H. parva*, *H. montana*, and *H. stejnegeri*, figured; S. B. WILSON & A. H. EVANS, *Av. Haw.*, part iii.
- H. sanguinea* : skeleton figured; A. B. MEYER, *Abbild. Vögel. Skel.*, Taf. clxiii, fig. 1.
- Loxioides baillieni* : skeleton figured; *id.* *op. cit.* Taf. clxv, fig. 2.
- Psittacirostra psittacea* : skeleton figured; *id.* *t. c.* fig. 1.

## Family FRINGILLIDÆ.

## Subfamily COCCOTHRAUSTINÆ.

- Coccothraustes vespertina*, in Ontario; *Trans. Can. Inst.* iii, pp. 111-124 : notes on; A. W. BUTLER, *Auk*, ix, pp. 238-274.
- Pyrrhulagra* for *Loxigilla* : L. STEJNEGER, in *Cory*, *Cat. W. Ind. Birds*, p. 148. *P. noctis grenadensis*, n. subsp., Grenada, and *P. n. ridgwayi*, Antigua; C. B. CORY, *t. c.* p. 150.

## Subfamily FRINGILLINÆ.

- Acanthis*, Bechst., = *Carduelis*; P. L. SCLATER, *Ibis*, 1892, pp. 555-557.
- Serinus serinus*, in Devonshire; W. E. H. PIDSELY, *Zool.* 1892, p. 114.
- Rhodacanthis*, n. g. Type, *R. palmeri*, Kona, Hawaii; W. ROTHSCILD, *Ann. & Mag. N. H.* (6) x, pp. 110 & 111. *R. flaviceps*, n. sp., Kona, Hawaii, *id.* *t. c.* p. 111.

- Telespiza flavissima*, n. sp., Laysan I., Sandwich Group, *id. t. c.* p. 110.  
*Carpodacus erythrinus*, breeding in East Prussia; E. HARTERT, *Ibis*, 1892, p. 368.  
*Uragus henrici*, n. sp., Tibet; E. OUSTALET, *Ann. Sci. Nat.* (7) xii, p. 291, pl. xi, fig. 2.  
*Eurhinospiza*, n. g. Type, *E. henrici*, n. sp.; E. OUSTALET, *Ann. Sci. Nat.* (7) xii, p. 293, pl. xi.  
*Hyphantospiza*, n. g. Type, *H. olivacea* (Fraser); A. REICHENOW, *Ber. Allg. Deutsch. Orn. Ges.* xi, p. 6.  
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## Subfamily EMBERIZINÆ.

- Emberiza cirius*: its distribution in Great Britain; O. V. APLIN, *Zool.* 1892, pp. 121-128 & 174-181. *E. hortulana*, in E. Bohemia; K. KNÉŽOWREK, *Orn. Jahrb.* iii, pp. 64-66. *E. cia*, near Graz; A. V. MOJSISOVICS, *t. c.* p. 79. *E. pusilla*, from Borneo; R. B. SHARPE, *Bull. B. O. C.* ii, p. iv.  
*Zonotrichia albicollis*, in California; R. RIDGWAY, *Auk*, ix, p. 302.

## Family ALAUDIDÆ.

- Alauda gulgula* and allies: remarks on; W. E. BROOKS, *Ibis*, 1892, pp. 61 & 62. *A. brachydactyla*, near Vichy, France; *Rev. Sci. Bourb.* v, p. 53. *A. yeltoniensis*, in Heligoland; H. GÄTKE, *Orn. Jahrb.* iii, p. 202.  
*Alaemon margaritæ*: eggs described; S. ALESSI, *J. f. O.* 1892, pp. 314 & 315.  
*Otocorys berlepschi*, figured; E. HARTERT, *Ibis*, 1892, pl. xiii.

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- Motacilla raii*, on the migration of; J. CORDEAUX, *Zool.* 1892, pp. 389-391.  
*Anthus blakistoni*, remarks on; W. E. BROOKS, *Ibis*, 1892, p. 61. *A. gustavi*: skeleton figured; A. B. MEYER, *Abbild. Vögel. Skel.* Taf. clxxi, fig. 1.

## Family MNIOTILTIDÆ.

- Seiurus noveboracensis notabilis*, in New Jersey; W. C. SOUTHWICK, *Auk*, ix, p. 303.  
*Dendroica petechia flaviceps*, n. subsp., Bahama Is., M. CHAPMAN, *Bull. Am. Mus.* iv, pp. 310 & 311. *D. nigrifrons*, ♂ ♀ figured; W. BREWSTER, *Auk*, ix, pl. i. *D. dugesi*, figured; A. DUGÈS, *Nat.*

- Mex. (2) ii, pp. 97 & 98, pl. v, fig. 1. *D. pennsylvanica* nesting in Missouri; B. F. GAULT, *Auk*, ix, p. 396.  
*Helminthophila pinus* × *H. leucobronchialis*; F. M. CHAPMAN, *t. c.* p. 302. *H. leucobronchialis*, in Queen's Co., Long I.; A. H. HOWELL, *t. c.* p. 306.

### Family CETHIDÆ.

- Certhia familiaris*, figured; E. H. GIGLIOLI & A. MANZELLA, *Iconogr. Avif. Ital.* pt. I. *C. mexicana* from Nicaragua; O. SALVIN & F. D. GODMAN, *Ibis*, 1892, p. 325.

### Family SITTIDÆ.

- Sitta cæsia homeyeri*, in East Prussia; E. HARTERT, *Ibis*, 1892, pp. 364 & 365. *S. neumayeri*, figured; E. H. GIGLIOLI & A. MANZELLA, *Iconogr. Avif. Ital.* pt. xl.

### Family MELIPHAGIDÆ.

- Viridonia*, n. g. Type, *V. sagittirostris*, n. sp., Sandwich Is.; W. ROTHSCCHILD, *Ann. N. H.* (6) x, p. 112.  
*Melipotes maculata*, n. sp., Mt. Suckling, S. E. New Guinea; C. W. DE Vries, *Ann. Rep. Brit. New Guinea*, 1890-91, App. cc, p. 94; *id.* *Ann. Queensl. Mus.* No. 2, p. 5.  
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*Stigmatops ocularis*: remarks on; J. BÜTTIKOFER, *Notes Leyd. Mus.* xiv, pp. 199 & 200.  
*Acrulocercus braccatus*: skeleton figured; A. B. MEYER, *Abbild. Vögel. Skel.*, Taf. clxiv, fig. 1.

### Family NECTARINIIDÆ.

- Nectarinia gadoui*, n. sp., Benguela; J. V. BARBOZA DU BOCAGE, *Journ. Lib.* (2) No. viii, p. 256. *N. osea*, near Beyrout; W. T. VAN DYCH, *Ibis*, 1892, p. 469.  
*Cinnyris nesophilus*, n. sp., Anjuan I., G. E. SHELLEY, *Bull. B. O. C.*, No. 2, p. iv. *C. oritis* and *C. preussi*, n. spp., Cameroons, A. REICHENOW, *Ber. Allg. Deutsch. Orn. Ges.*, March, 1892, p. 4: *id.* *J. f. O.* 1892, p. 190.

### Family DICEIDÆ.

- Dicaeum wilhelmina*, n. sp., Sumba I., J. BÜTTIKOFER, *Notes Leyd. Mus.* xiv, p. 199.

## Family ZOSTEROPIDÆ.

*Zosterops incerta*, n. sp., I. of Engano, Sumatra, T. SALVADORI, Ann. Mus. Genov. (2) xii, p. 133. *Z. squamifrons*, n. sp., Mt. Dulit, N. W. Borneo, R. B. SHARPE, Ibis, 1892, p. 323. *Z. anderssoni*, n. sp., Damaraland, G. E. SHELLEY, Bull. B. O. C., No. 2, p. v. *Z. stuhlmanni*, n. sp., Victoria Nyansa, A. REICHENOW, Ber. Allg. Deutsch. Orn. Ges., March, 1892, p. 7 : *id.* J. f. O. 1892, p. 54. *Z. stenocricola*, n. sp., Cameroons, *id.* Ber. Allg. Deutsch. Ges., March, 1892, p. 7 : *id.* J. f. O. 1892, p. 191. *Z. flavilateralis*, n. sp., East Africa, *id.* t. c. p. 192. *Z. superciliosa*, n. sp., Equatorial Africa, *id.* *ibid.* *Z. atrifrons* : skeleton figured ; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxxiii, fig. 1. *Z. mussoti*, n. sp., Szechuen, E. OUSTALET, Ann. Sci. Nat. (7) xii, p. 289.

## Family REGULIDÆ.

*Regulus* : notes on the genus, with key to species ; T. PLESKE, Mém. biol., Taf. xiii, livr. 2, pp. 303-337. *R. tristis*, n. sp., *id.* t. c. p. 306, Turkestan. *R. himalayensis*, remarks on ; W. E. BROOKS, Ibis, 1892, p. 59.

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*Acridula irbii*, in South Tirol ; V. RITTER VON TSCHUSI ZUR SCHMID-HOFFEN, Orn. Jahrb. iii, p. 122. *A. macedonica*, n. sp., Macedonia, T. SALVADORI & H. E. DRESSER, Bull. B. O. C. No. 4, p. xvi. *A. bonvaloti*, n. sp., Tà-tsién-lou ; E. OUSTALET, Ann. Sci. Nat. (7) xii, pp. 284-286, pl. ix, fig. 1.

## Family LANIIDÆ.

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 Great Britain ; O. V. APLIN, Zool. 1892, pp. 345-352 : in Sussex ;  
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*Laniarius gubernator*, n. sp., Cameroons, A. REICHENOW, Ber. Allg.  
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*Nilais nigritemporalis*, n. sp., Ngoma, Equatorial Africa, *id.* t. c. p. 3 : *id.*  
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*Hypocolius ampelinus*, ♂ ♀ figured ; P. L. SCLATER, P. Z. S. p. 470.  
*Eopsaltria sudestiensis*, n. sp., Sud-est I., Louisiade Archipelago,  
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#### Family AMPELIDÆ.

- Ampelis macsi*, n. sp., Japan, E. OUSTALET, N. Arch. Mus. Paris (3) iv,  
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#### Family VIREONIDÆ.

- Vireo* : notes on West Indian species ; C. B. CORY, Cat. W. Ind. Birds,  
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#### Family TURDIDÆ.

- Geocichla everetti*, n. sp., Mt. Dulit, Sarawak, Borneo, R. B. SHARPE,  
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*Turdus nigrilorum*, n. sp., Cameroons, A. REICHENOW, Ber. Allg. Deutsch.  
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*Erythacus sibilans*, from Hainan ; G. HARTLAUB, Abh. Ver. Brem. xii,  
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## Family SYLVIIDÆ.

- Sylvia nisoria* in Yorkshire ; J. CORDEAUX, Zool. 1892, p. 424 ; *id.* P. Z. S. 1892, p. 542 : records of capture in Great Britain ; H. SEEBOHM, Bull. B. O. C., No. 3, p. xi.
- Hypolais caligata* and *H. roma* : remarks on ; W. E. BROOKS, Ibis, 1892, pp. 59 & 60. *H. rama* and *Acrocephalus streperus* : hybrid described ; TH. PLESKE, Orn. Ross. pp. 561-563.
- Phylloscopus neglectus* and *P. sirdianus* : remarks on ; W. E. BROOKS, Ibis, 1892, p. 60. *P. rufus*, wintering in Somerset ; R. H. READ, Zool. 1892, p. 111 : unusual nesting ; *id. ibid.* : notes on nesting ; J. BACKHOUSE, *t. c.* p. 150 ; C. F. ARCHIBALD, *t. c.* p. 226. *P. superciliosus*, in Lincolnshire ; G. H. CATON HAIGH, Zool. 1892, p. 413.
- Acanthopneuste ijima*, n. sp., Seven Is., Japan ; L. STEJNEGER, P. U. S. Nat. Mus. xv, p. 372.
- Luscinola melanopogon*, in Hungary ; A. GRUNACK, J. f. O. 1892, pp. 213 & 214.
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- Cettia canturiens*, ♂ ad. figured ; *id. t. c.*, tab. iv, fig. 3. *C. minuta* ; *id. t. c.*, tab. iv, fig. 4. *C. canturiens septentrionalis*, n. subsp., Russian Manchuria ; C. W. CAMPBELL, Ibis, 1892, p. 235. *C. canturiens borealis*, n. subsp., Corea ; *id. t. c.* p. 235.
- Urosphena squamiceps*, ad. figured ; T. PLESKE, Orn. Ross., tab. iv, fig. 5.
- Acrocephalus fruticola* (Naum.), in E. Prussia ; E. HARTERT, Ibis, 1892, pp. 361 & 362. *A. palustris*, in Oxfordshire ; W. WARDE FOWLER, Zool. 1892, pp. 303-309.
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- Burnesia epichlora*, n. sp., Camaroons ; A. REICHENOW, Ber. Allg. Deutsch. Orn. Ges., Feb. 1892, p. 6 ; figured, *id.* J. f. O. 1892, p. 193, tab. ii, fig. 1.
- Drymæca sahara*, figured ; A. KOENIG, J. f. O. 1892, tab. iii.
- Apalis mystacalis* [Zool. Rec. xxviii, *Aves*, p. 65], figured ; A. REICHENOW, *t. c.* tab. i, fig. 2. *A. jacksoni* [Zool. Rec. xxviii, *Aves*, p. 65], figured ; R. B. SHARPE, Ibis, 1892, pl. iv, fig. 2. *A. pulchra* [Zool. Rec. xxviii, *Aves*, p. 65], figured ; *id.* *t. c.* pl. iv, fig. 1.
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- Acanthiza tenkatei*, n. sp., Flores ; J. BÜTTIKOFER, Notes Leyd. Mus. xiv, p. 195.
- Cisticola emini*, n. sp., Victoria Nyanza ; A. REICHENOW, J. f. O. 1892, p. 56. *C. chubbi*, n. sp., Mt. Elgon, E. C. Africa ; R. B. SHARPE, Ibis, 1892, pp. 157 & 158.
- Graminicola striata*, n. sp., Hainan ; F. W. STYAN, Bull. B. O. C., No. 2, p. vi.

#### Family TROGLODYTIDÆ.

- Elachura haplonota*, n. sp. [*E. immaculata* on plate], from N. Cachar, Assam ; E. C. S. BAKER, J. Bomb. N. H. Soc. vii, pp. 319-322 ; Ibis, 1892, pp. 62-64, pl. i, fig. 1. *E. punctata*, figured ; *id.* *t. c.* pl. i, fig. 2.

#### Family CINCLIDÆ.

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#### Family MIMIDÆ.

- Minus polyglottus*, formerly in New Jersey ; S. LOCKWOOD, Am. Nat. xxvi, pp. 635-641.
- Harpophynchus curvirostris palmeri* : its nesting habits ; H. BROWN, Zoe, iii, pp. 243-248.

#### Family TIMELIIDÆ.

- Bubaz lanceolatus*, var. *bonvaloti*, n. subsp., So, Tibet ; E. OUSTALET, Ann. Sci. Nat. (7) xii, p. 273.
- Pomatorhinus maclellandi*, var. *dedekensi*, n. subsp., Tioungou ; *P. m.*, var. *armandi*, n. subsp., Aio, Tibet ; E. OUSTALET, *t. c.* pp. 276 & 277.

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- Suthora fulvicauda* and *S. longicauda*, n. spp., Corea ; C. W. CAMPBELL, Ibis, 1892, p. 237.
- Amalocichla*, n. g. Type, *A. sclateriana*, n. sp., Mt. Suckling, S. E. New Guinea ; C. W. DE VIS, Ann. Rep. Brit. New Guinea, App. cc, 1890-91, p. 95 ; *id.* Ann. Queensland Mus., No. 2, pp. 5 & 6.
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- Turdinus monachus*, n. sp., Cameroons ; A. REICHENOW, Ber. Allg. Deutsch. Orn. Ges., Feb. 1892, p. 4 ; *id.* J. f. O. 1892, p. 193. *T. moloneyanus*, n. sp., Gold Coast ; R. B. SHARPE, P. Z. S. 1892, p. 228, pl. xx, fig. 2.
- Amaurocichla*, n. g. Type, *A. bocagii*, n. sp., St. Thomas, West Africa ; *id. t. c.* p. 228, pl. xx, fig. 1.
- Ptilocichla leucogastra*, n. sp., Pahang, E. Malay Peninsula, W. R. DAVISON, Ibis, 1892, pp. 100 & 101.
- Malacopteron melanocephalum*, n. sp., Pahang, E. Malay Peninsula, *id. t. c.* pp. 101 & 102.
- Eupetes geislerorum*, n. sp., Butaueng, N. E. New Guinea ; A. B. MEYER, J. f. O. 1892, pp. 259 & 260.
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- Alcippe bieti*, n. sp., E. OUSTALET, Tà-taién-lou, Ann. Sci. Nat. (7) xii, p. 304.

### Family PYCNONOTIDÆ.

- Hypsipetes psaroides* and *H. concolor* : account of nesting habits ; E. C. S. BAKER, J. Bomb. N. H. Soc. vii, pp. 129 & 265.
- Hemixus flava* : account of nesting habits ; *id. t. c.* p. 7.
- Criniger aureus*, note on ; A. B. MEYER, Ibis, 1892, pp. 178 & 180. *C. flaveolus*, figured with nest ; E. C. S. BAKER, J. Bomb. N. H. Soc. vii, pl. ii.
- Otocompsa emeria* and *O. flaviventris*, figured with nests ; *id. t. c.* pls. viii & xv.
- Xanthizus flavescens*, figured with nest ; *id. t. c.* pp. 1-4, pl. i.
- Pinarocichla schmackeri*, n. sp., Hainan ; F. W. STYAN, Bull. B. O. C., No. 2, p. vi [= *Criniger pallidus*, Swinhoe ; R. B. SHARPE, *op. cit.* No. 4, p. xix].
- Xenocichla poliocephala*, n. sp., Cameroons ; A. REICHENOW, Ber. Allg. Deutsch. Orn. Ges., Feb. 1892, p. 5 ; *id.* J. f. O. 1892, p. 189.
- Spizixus canifrons* : account of nesting habits ; E. C. S. BAKER, J. Bomb. N. H. Soc. vii, p. 10.
- Andropadus montanus*, n. sp., Cameroons ; A. REICHENOW, Ber. Allg. Deutsch. Orn. Ges., Feb. 1892, p. 5 ; *id.* J. f. O. 1892, p. 188. *A. cameronensis*, n. sp., Cameroons, *id.* J. f. O. 1892, pp. 126 & 127. *A. eugenius*, n. sp., Victoria Nyanza, *id. t. c.* p. 133.

## Family CAMPOPHAGIDÆ.

- Graucalus preussi*, n. sp., Cameroons, A. REICHENOW, Ber. Allg. Deutsch. Orn. Ges. xi, p. 4. *G. enganensis*, n. sp., I. of Engano, T. SALVADORI, Ann. Mus. Genov. (2) xii, pp. 129 & 130. *G. nigrifrons*, n. sp., Bugotu, Solomon Is., H. B. TRISTRAM, Ibis, 1892, p. 294. *G. welchmani*, n. sp., Bugotu, *id. t. c.* pp. 294 & 295. *G. leucopygius*: skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxvi, fig. 2.
- Edoliisoma tenuirostre*: nest and eggs described; A. J. NORTH, Rec. Austral. Mus. ii, pp. 13 & 14. *E. morio*: skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxvii, fig. 2.
- Campophaga minor*, n. sp., Pahang, E. Malay Peninsula, W. R. DAVISON, Ibis, 1892, p. 99 [= *Lalage culminata*; R. B. SHARPE, Bull. B. O. C., No. 2, p. vii].
- Pericrocotus modiglianii*, n. sp., I. of Engano, T. SALVADORI, Ann. Mus. Genov. (2) xii, pp. 130-132. *P. wayi* = *P. montanus*: *P. cinereigula* also probably identical; R. B. SHARPE, Ibis, 1892, p. 435.
- Lalage leucopygialis*: skeleton figured; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxvii, fig. 1.

## Family MUSCICAPIDÆ.

- Aleoonax pumila*, n. sp., Bukoba, Victoria Nyanza, A. REICHENOW, Ber. Allg. Deutsch. Orn. Ges., Jan. 1892, xi, p. 3; *id. J. f. O.* 1892, pp. 32 & 33.
- Platystira jacksoni* [Zool. Rec. xxviii, *Aves*, p. 67], fully described and figured; R. B. SHARPE, Ibis, 1892, p. 301, pl. vii, fig. 2.
- Muscicapa grisola*: supposed occurrence in N. Zealand; F. W. HUTTON, Tr. N. Z. Inst. xxiv, p. 710 [Determination erroneous; *teste* H. O. FORBES]. *M. collaris*, figured; E. H. GIGLIOLI & A. MANZELLA, Iconogr. Avif. Ital. pt. xlix.
- Erythrostera parva*, figured; *id. t. c.* pt. xlix.
- Muscicapa johnstoni* = *Dioptrornis fischeri*; R. B. SHARPE, Ibis, 1892, pp. 300 & 301.
- Rubecula tytleri*, Jameson = *Muscicapa parva*; W. E. CLARKE, Ibis, 1892, pp. 558 & 559.
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- Psalidoprocne chalybea*, n. sp., Cameroons; *id. op. cit.*, Sept. 1892, p. 6.

### Section B. OLIGOMYODÆ.

#### Family TYRANNIDÆ.

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- Lophotriccus subcristatus*, n. sp., Venezuela; *id. t. c.* p. 53.

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- Ornithion pusillum subflavum*, n. subsp., Costa Rica ; *id.* t. c. p. 28.
- Pitangus jamaicensis*, n. sp., Jamaica ; F. M. CHAPMAN, Bull. Am. Mus. iv, p. 303.
- Pyrocephalus rubineus heterurus*, n. subsp., Lima, Peru ; H. VON BERLEPSCH & J. STOLZMANN, P. Z. S. 1892, p. 381.
- Myiarchus nuttingi*, in Arizona ; A. K. FISHER, Auk, ix, p. 394. *M. brevipennis*, n. sp., I. of Aruba, E. HARTERT, Bull. B. O. C., No. 3, p. xii.

### Family COTINGIDÆ.

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### Family PITTIIDÆ.

- Pitta granatina borneensis*, n. subsp., Borneo, D. G. ELLIOT, Auk, ix, pp. 218-221.
- Erythropitta celebensis* : skeleton figured ; A. B. MEYER, Abbild. Vögel. Skel., Taf. clxi, fig. 1.

## Division II. TRACHEOPHONÆ.

### Family DENDROCOLAPTIDÆ.

#### Subfamily FURNARIINÆ

- Upucerthia harterti*, n. sp., Bolivia, H. VON BERLEPSCH, Ber. Allg. Deutsch. Orn. Ges., Dec. 1892, p. 10.
- Cinclodes taczanowskii*, n. sp., Chorillos, Peru, *id.* & J. STOLZMANN, P. Z. S. 1892, p. 381.

### Family FORMICARIIDÆ.

- Thamnophilus punctatus* and *T. bridgesi*, figured ; O. SALVIN & F. D. GODMAN, Biologia Centrali-americana, *Aves*, ii, pl. xlix, figs. 1 & 2.
- T. atrinucha*, n. sp., Honduras to Ecuador, *id.* t. c. pp. 200 & 201.
- T. immaculatus*, Lafr., is a *Myrmelastes* ; *id.* t. c. p. 225.
- Myrmelastes lawrencii*, n. sp. [= *M. corvinus*, Lawr., nec Gould], Panama, *id.* t. c. pp. 226 & 227. *M. intermedius*, figured [n. s. *Myrmeciza immaculata*], *id.* t. c. pl. li, figs. 2 & 3.
- Thamnestes anabatinus*, ♂ figured ; *id.* t. c. pl. l, fig. 1.

- Dysithamnus puncticeps*, ♂ ♀ figured ; *iid. t. c.* pl. 1, figs. 2 & 3.
- Formicivora stictocorypha*, n. sp., Porto Real, Brazil, A. BOUCARD & H. VON BERLEPSCH, Humming Bird, ii, p. 44.
- Myrmeciza leucosticta*, figured ; *iid. t. c.* pl. li, fig. 1. *M. nigricauda*, n. sp., Ecuador, *iid. t. c.* p. 230. *M. occidentalis*, n. sp., Costa Rica, G. K. CHERRIE, An. Mus. Costa Rica, iii, p. 135.
- Pithys leucaspis* is a *Gymnopithys*; O. SALVIN & F. D. GODMAN, *t. c.* p. 221.
- G. ruficeps*, n. sp., Colombia, *iid. t. c.* p. 222, note.
- Grallaria princeps* (pl. lii), *G. dives* (pl. liii, fig. 1), and *G. perspicillata* (pl. liii, fig. 2), figured ; *iid. t. c.* *G. lisanoi*, n. sp., Costa Rica, G. K. CHERRIE, An. Mus. Costa Rica, iii, p. 137.



## IV. REPTILIA AND BATRACHIA.

BY

G. A. BOULENGER.

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This subject is treated as follows, viz :—

- I. TITLES OF ALL WORKS AND PAPERS ARRANGED  
ALPHABETICALLY ACCORDING TO AUTHORS' NAMES.
  - II. WORKS AND PAPERS DEALING WITH BOTH REPTILES AND  
BATRACHIANS.
  - III. FAUNISTIC : A, RECENT ; B, FOSSIL.
  - IV. REFERENCES, ARRANGED SYSTEMATICALLY.
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\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.



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## II.—WORKS AND PAPERS DEALING WITH BOTH REPTILES AND BATRACHIANS.

O. BETTGER & PECHUEL-LOESCHE have prepared the seventh volume, dealing with the Reptiles and Batrachians, of the third revised edition of BREHM's Tierleben (Leipzig & Vienna: 1892).

Remarks on phylogeny of the Reptiles and Batrachians; E. D. COPE, *P. Am. Phil. Soc.* xxx, 1892, pp. 278-280.

Development and phylogeny of the vertebral column; C. HASSE, *Anat. Anz.* viii, 1893, pp. 288 & 289, summarises his views on this. He traces two phyla: one embracing the Ganoids, Teleostei, Tailless Batrachians, and Amniota; the other the Selachians, Dipnoi, and Tailed Batrachians.

The morphology of the vertebral column and ribs, by L. DOLLO, *Bull. Sci. Fr. Belg.* xxiv, 1892 [quoted from separate copies].

R. WIEDERSHEIM's book, "Das Gliedmasenskelet der Wirbelthiere" (see p. 15), deals chiefly with the pectoral and pelvic arches and limbs of Reptiles and Batrachians.

Phylogeny of the marsupial bones of Mammals. R. WIEDERSHEIM, *à propos* of this, enters into details on the morphology of the pelvis in Reptiles and Batrachians; *Z. wiss. Zool.* liii (Suppl.), 1892, pp. 1-20, pls. i-iii.

Myology of the hind limb in Lizards and Batrachians; A. FERRIN, *C.R. cxv*, 1892, pp. 885-887, and *Bull. Sci. Fr. Belg.* (4) iii, 1892, pp. 373-552, has a contribution on.

On the nerve-terminations in the skin of Reptiles and Batrachians. G. RETZIUS, *Biol. Unters.* (2) iv, 1892, pp. 19-44, pls. vii-xv.

Copulatory organs in the various groups of Reptiles and Batrachians ; REMY SAINT-LOUP, C.R. Soc. Biol. (9) iv, 1892, pp. 176-179, figs., remarks on the difference in these.

Morphology of the vertebrate ear ; H. AYERS, J. Morph. vi, 1892, pp. 1-360, pls. i-xii.

Morphology of the peritoneum in Reptiles and Batrachians ; H. KLAATSCH, Morph. JB. xviii, 1892, pp. 385-450, figs., pl. xii.

Markings of Reptiles and Batrachians ; F. WERNER, Zool. JB., Syst. vi, 1892, pp. 155-229, pls. vi-x, deals with their signification.

Seventh supplement to his Catalogue of the Herpetological Collection in the Basle Museum ; F. MÜLLER, Festschr. Nat. Ges. Basel, 1892, pp. 195-215, pl. iii.

### III.—FAUNÆ.

#### A.—RECENT.

##### EUROPE.

European Batrachians ; G. A. BOULENGER, P. Z. S. 1892, pp. 593-627, pls. xlv-xlvii, describes and figures the Tadpoles.

Isle of Man ; KERMODE, Zool. (3) xvii, 1893, pp. 64 & 65.

"Vertebrate Fauna of Argyll and Inner Hebrides" (Edinburgh : 1892, 8vo) ; J. A. HARVIE-BROWN & T. E. BUCKLEY devote pp. 216-218 to the Reptiles and Batrachians.

"Vertebrate Fauna of Lakeland" (Edinburgh : 1892, 8vo) ; H. A. MACPHERSON, pp. 461-465, deals with the Reptiles and Batrachians.

"Fauna and Flora of Gloucestershire" (Stroud : 1892, 8vo) ; C. A. WITCHELL & W. B. STRUGNELL, Reptilia and Amphibia, pp. 124-148, figs.

Department Indre, France : R. MARTIN & R. ROLLINAT, Mém. Soc. Zool. v, 1892, pp. 30-38, enumerate the Reptiles and Batrachians of.

Department Basses Alpes : E. F. HONNORAT-BASTIDE, CR. Ass. Fr. Sci. 1891, ii, pp. 583-586, remarks on the herpetological fauna of the.

France and Germany : J. DE BEDRIAGA, CR. Congrès. Internat. Zool. i, 1892, p. 244, draws attention to some recent introductions of foreign Reptiles and Batrachians.

N. W. Germany : ERWIN SCHULZE & F. BORCHERDING publish a catalogue of the Reptiles and Batrachians of ; Jena : 1893, 8vo, 94 pp., figs.

Grand Duchy of Baden : G. N. DOUGLASS concludes his Herpetology of ; Zool. (3) xvi, 1892, pp. 15-19 & 211-222.

Kronstadt, Transylvania : L. VON MÉHELÿ, in Beiträge zu einer Monographie der k. freien Stadt Kronstadt (Kronstadt : 1892, 8vo), contributes an article (91 pp.) on the Herpetology of the environs of.

Portugal : J. BETTENCOURT FERREIRA, J. Sci. Lisb. (2) ii, 1892, pp. 268-290, list of the Reptiles and Batrachians.

Province of Rome : A. CARUCCIO, Boll. Soc. Rom. i, 1892, pp. 39-57, describes the harmless Snakes.



Sicily : F. MINA-PALUMBO, *Nat. Sicil.* xi, 1892, pp. 114-120, 239-252, and xii, 1892-3, pp. 52-56, 75-80, 148-150, articles on the Herpetology of.

### ASIA.

Caucasus District : O. BËTTGER, *Ber. Senck. Ges.* 1892, pp. 131-150, has notes on Reptiles and Batrachians.

Mangyechlak and Busatschi : A. OSTROUMOFF, *Protok. obsch. estest. Kazan.* 1889-90, Append. No. 113 (1890), gives an account, in Russian, of a zoological excursion.

Transcaspiian Reptiles : G. A. BOULENGER, *P. Z. S.* 1891, pp. 622-633, has notes on.

Aden : O. BËTTGER, *Ber. Offenb. Ver.* xxix-xxxii, 1892, pp. 61-63, records some Reptiles from.

Upper Yang-tse-kiang and Sze-Chuen : A. GÜNTHER gives a list of the Reptiles and Batrachians collected by Mr. A. E. Pratt, Appendix ii to PRATT'S "Snows of Tibet" (London : 1892, 8vo), pp. 238-242, pl. i.

Great Loo Choo I. : G. A. BOULENGER, *Ann. N. H.* (6) x, 1892, pp. 302-304, remarks on a collection of Reptiles and Batrachians made by Mr. Holst.

India and Ceylon, Salanga I. in Siam, Camboja, Sumatra, and Java : O. BËTTGER, *Ber. Offenb. Ver.* xxix-xxxii, 1892, pp. 65-145, reports on collections from.

India and Burma : W. L. SCLATER, *P. Z. S.* 1892, pp. 341-348, pl. xxiv, has notes on the Frogs preserved in the Calcutta Museum.

Ceylon : A. ITALY, *J. A. S. (Ceylon)* xi, 1892, pp. 22-32 & 183-232, table for the identification of the Snakes.

Engano I., S. E. of Sumatra : D. VINCIGUERRA, *Ann. Mus. Genov.* (2) xii, 1892, pp. 517-526, reported on the Reptiles and Batrachians collected by Modigliani.

Borneo : F. MOCQUARD, *Mém. Soc. Zool.* v, 1892, pp. 190-206, pl. vii, reports on a collection of Reptiles and Batrachians from W. Borneo, and also remarks on some of the specimens previously described by himself. G. A. BOULENGER, *P. Z. S.* 1892, pp. 505-508, pls. xxix & xxx, reports on the Reptiles and Batrachians collected by Mr. C. Hose on Mt. Dulit.

### AFRICA.

Algeria and Tunisia : J. ANDERSON, *P. Z. S.* 1892, pp. 11-24, list of Reptiles and Batrachians, with notes.

Algeria : F. WERNER, *Verh. z.-b. Wien.* xlii, 1892, pp. 350-355, and *Zool. Gart.* xxxiii, 1892, pp. 264-273, has notes on the Reptiles and Batrachians collected by himself.

Tunisia : A. KÖNIG, *SB. niederrhein. Ges.* 1892, pp. 3-26, enumerates, with notes, the Reptiles and Batrachians collected by himself.

Portuguese Guinea : J. V. BARBOZA DU BOCAGE, *J. Sci. Lisb.* (2) ii, 1892, pp. 183 & 184, enumerates the Reptiles.

Is. of the Gulf of Guinea : J. DE BEDRIAGA, O Istituto, ser. 2, Nos. 6 & 7, 1892, describes the Reptiles and Batrachians obtained by A. F. Moller in the ; remarks by J. V. BARBOZA DU BOCAGE, J. Sci. Lib. (2) ii, 1892, pp. 229-232.

Congo : D. A. DEL PRATO, in a separately published pamphlet (Parma : 1893, 8vo, 14 pp.), gives a list of Reptiles.

Usambara, German East Africa : P. MATSCHIE, SB. nat. Fr. 1892, pp. 102-110, reports on a small collection of Reptiles and Batrachians.

Nyassaland : A. GÜNTHER, P. Z. S. 1892, pp. 555-558, pls. xxxiii-xxxv (1893), reports on a collection of Reptiles and Batrachians.

Transvaal : G. A. BOULENGER gives a list of the Reptiles and Batrachians obtained by W. L. Distant, Appendix to Distant's "Naturalist in the Transvaal" (London : 1892, 8vo), pp. 174-176, fig.

Madagascar : M. G. PERACCA, Boll. Mus. Zool. Tor. vii, 1892, No. 112, describes two new Snakes and a new Frog.

#### AMERICA.

North America : E. D. COPE, P. U. S. Nat. Mus. xiv, 1892, pp. 589-694, critical review of the characters and variations of the Snakes.

Nebraska : W. E. TAYLOR, Catalogues of the Snakes, with notes on their habits and distribution ; Report of the Nebraska State Board of Agriculture, 1891, and Am. Nat. xxvi, 1892, pp. 742-752.

Montana and Wyoming : F. C. TEST, Bull. U. S. Fish. Comm. 1891, pp. 57-59 (1892), remarks on some Reptiles and Batrachians.

Illinois : H. GARMAN, Bull. Illin. Lab. N. H. iii, 1892, pp. 215-389, pls. ix-xv, synopsis of the Reptiles and Batrachians.

Texas : S. GARMAN, Bull. Ess. Inst. xxiv, 1892, pp. 98-109, reports on a collection of Reptiles.

North Western Texas : E. D. COPE, P. Ac. Philad. 1892, pp. 331-337, list of Reptiles and Batrachians.

Dominica, West Indies : G. E. VERRILL, Tr. Conn. Ac. viii, 1892, pp. 350-352 & 355.

Galapagos and Guayaquil : S. GARMAN, Bull. Ess. Inst. xxiv, 1892, pp. 73-95, reports on the Reptiles obtained by G. Baur.

Chili : F. LATASTE, Actes Soc. Sci. Chili, i, 1892, pp. 7-40, publishes a revision of the *Lacertilia*, minus the genus *Liolæmus*.

#### PAPUASIA AND AUSTRALIA.

Ceram, Amboyna, Banda, and New Guinea : O. BËTTGER, Ber. Offenb. Ver. xxix-xxxii, 1892, annotated list of Reptiles and Batrachians.

British New Guinea : C. W. DE VIS, Ann. Queensland Mus. i, 1892, No. 2, pp. 11 & 12, enumerates some Reptiles.

Australia : J. J. FLETCHER, P. Linn. Soc. N.S.W. (2) vii, 1892, pp. 7-19, publishes a third contribution to a more exact knowledge of the geographical distribution of the Batrachia.

Victoria : A. H. S. LUCAS, P. R. Soc. Vict. (2) iv, 1892, pp. 59-64, has notes on the distribution of Victorian Batrachians.

#### B.—FOSSIL.

Rhone Basin : L. LORTET, Arch. Mus. Lyon, v, 1892, pp. 1-139, figs., pls. i-xii, monographs the fossil Reptiles and Batrachians. Critical remarks on some of the Lizards and Rhynchocephalians are made by G. A. BOULENGER, Ann. N. H. (6) xi, 1893, pp. 204-210.

United States : O. C. MARSH, Am. J. Sci. (3) xliii, 1892, pp. 449-453, figs., and xliv, 1892, pp. 171-176, pls. ii-v, describes various Reptilian remains from the Laramie formation.

Texas : E. D. COPE, P. Am. Phil. Soc. xx, 1892, pp. 123-131, describes fossil Reptiles.

Parana : J. B. AMBROSETTI, Bol. Ac. Cordoba, x, 1890, pp. 409-426, describes fossil Oligocene Reptiles.

Queensland : R. L. JACK & R. ETHERIDGE, JUN., Geol. and Pal. Queensland and New Guinea (Brisbane and London : 1892, 8vo), pp. 648-653, enumerate the fossil Reptiles.

#### IV.—REFERENCES, ARRANGED SYSTEMATICALLY.

#### REPTILIA.

H. G. SEELEY, dealing with the systematic position of *Pariosaurus*, expresses his views on the relations of the various groups of Reptilia. The Labyrinthodonts are referred to this class. Phil. Tr. clxxxiii (B), 1892, pp. 367 & 368.

E. D. COPE, Tr. Am. Phil. Soc. xvii, 1892, pp. 11-26, pls. i-v, discusses the homologies of the posterior cranial arches in the Reptilia. The author admits as probable Baur's hypothesis, which supposes the bars to have been derived from a roofed skull by perforation. The elements usually termed quadratojugal, squamoral, and supratemporal, are respectively named zygomatic, supratemporal, and supra-mastoid. The paper concludes with systematic considerations which do not differ materially from the views expressed by the same author in 1885.

J. W. HULKE, P. R. Soc. lii, 1892, pp. 233-255, figs., discusses the homology of the various elements in the Reptilian shoulder-girdle.

A. MEYER, Z. wiss. Zool. lv, 1892, pp. 63-133, pls. iv & v, writes on the brain of Reptiles.

E. BÉRANEK, Anat. Anz. vii, 1892, pp. 674-689, figs., writes on the pineal eye and its nerve.

A. DE KLINCKOWSKA, Anat. Anz. viii, 1893, pp. 289-299, figs., studies the early development of the pineal eye, the epiphysis, and the parietal nerve in *Iguana*.

- F. MAURER, *Morph. JB.* xviii, 1892, pp. 739-747, remarks on the formation and structure of scales in the Reptiles.
- C. RÖSE, *Anat. Anz.* vii, 1892, pp. 748-758, figs., writes on the development of teeth and egg-tooth in Reptiles.
- C. K. HOFFMANN, *Verh. Ak. Amst.* xxix, 1892, pp. 1-19, pls. i & ii, writes on the development of the venous system in Reptiles.
- F. HOCHSTETTER, *Morph. JB.* xix, 1892, pp. 428-501, pls. xv-xvii, contributes to the knowledge of the development of the venous system in Reptiles, his researches being chiefly based on *Lacerta* and *Tropidonotus*.
- E. GIACOMINI has preliminary notes on the foetal membranes of Reptiles; *Mon. Zool. Ital.* iii, 1892, pp. 126-128, 157-164, & 185-196.
- H. VIRCHOW, *Z. wiss. Zool.* liii (Suppl.), 1892, pp. 170-206, pl. x, deals specially with the vitelline sac of Reptiles.
- A. OPPEL, *Arch. mikr. Anat.* xxxix, 1892, pp. 215-290, pls. ix-xii, deals with the fecundation of the egg in *Anguis fragilis* and *Tropidonotus natrix*.
- C. BENDA, *Verh. Anat. Ges.* 1892, pp. 195-199, writes on the histogenesis of the Sauropidan spermatozoon.
- F. WERNER, *Biol. Centralbl.* xii, 1892, pp. 272-277, offers further remarks on the markings of Reptiles.
- F. WERNER, *Zool. Gart.* xxxiii, 1892, pp. 367-372, has biological notes on various Reptiles.

## SQUAMATA.

## LACERTILIA.

- E. D. COPE, *P. Am. Phil. Soc.* xxx, 1892, pp. 185-221, pls. ii-vi, writes on the osteology of the Lacertilia, and *J. Morph.* vii, 1892, pp. 223-244, pl. xiii, on degenerative types of scapular and pelvic arches in the Lacertilia.
- F. SIEBENROCK, *Ann. Hofmuseum Wien*, vii, 1892, pp. 163-196, pls. i & ii, makes a comparative study of the skulls in the principal genera of *Scincidae*, *Anguidae*, and *Gerrhosauridae*. The same author, *t. c.* pp. 373-378, writes on the sacrum of Lacertilia.
- R. v. SEILLER, *Leuckart Festschrift*, 1892, pp. 250-258, pls. xxv & xxvi, writes on the lingual glands of *Lacerta*.
- G. CHIARUGI, *Monit. Zool. Ital.* iii, 1892, pp. 211 & 212, and *Arch. Ital. Biol.* xviii, 1893, pp. 363 & 364, has a preliminary note on the development of the olfactory nerve in *Lacerta muralis*.
- L. WILL, *Morph. JB., Anat.* vi, 1892, pp. 1-160, figs., pls. i-xi, deals with the embryology of *Tarentola mauritanica*, L.
- P. MINGAZZINI, *Atti Acc. Lincei* (5) i, 1892, *Rend.* pp. 41-45, has a note on the gestation in *Chalcides tridactylus*.
- STRAHL, *Verh. Anat. Ges.* 1892, pp. 190-195, remarks on retrogression of ripe ovarian eggs in *Lacerta agilis*.

## GECKONIDÆ.

- Teratoscincus scincus*, Schleg.: note on Transcaspian specimens; BOULENGER, P. Z. S. 1891, p. 629.
- Gymnodactylus caspius*, Eichw., and *G. fedtschenkoi*, Strauch: notes by BOULENGER, *t. c.* pp. 629 & 630. *G. louisianensis*, n. sp., DE VIS, Ann. Queensland Mus. i, 1892, No. 2, p. 11, Sudest I., British New Guinea. *G. sphyrurus*, p. 6, New South Wales, and *cornutus*, p. 8, N. E. Queensland, n. spp., DOUGLAS-OGILBY, Rec. Austral. Mus. ii, 1892.
- Gonatodes collaris*, n. sp., GARMAN, Bull. Ess. Inst. xxiv, 1892, p. 83, Chatham I., Galapagos.
- Diplodactylus intermedius*, n. sp., DOUGLAS-OGILBY, *t. c.* p. 10, Interior of New South Wales.
- Phyllodactylus galapagensis*, Ptrs.: notes by GARMAN, Bull. Ess. Inst. xxiv, 1892, p. 81. *P. baurii*, n. sp., *id. t. c.* p. 82, Charles I., Galapagos.
- Ptyodactylus lacazii*, n. sp., BOUTAN, Arch. Z. expér. (2) x, 1892, p. 17, N. W. Arabia [= *P. lobatus*, L.—REC.].
- Hemidactylus mabouia*, Mor.: on variations in the femoral pores; BOCAGE, J. Sci. Lisb. (2) ii, 1892, p. 221: n. var *molleri*; BEDRIAGA, O Istituto (Coimbra), xxxix, 1892 (p. 19 of reprint), S. Thomé, Gulf of Guinea.
- H. greeffii*, Bocage: remarks, *id. ibid.* p. 16.
- Lygodactylus conradti*, n. sp., MATSCHIE, SB. nat. Fr. 1892, p. 109, Usambara, German E. Africa. *L. angularis*, n. sp., GÜNTHER, P. Z. S. 1892, p. 555, pl. xxxiii, fig. 1 (1893), Nyassaland.
- Ptychozoon horsfieldii*, Gray, described and figured by F. MÜLLER, Festachr. Nat. Ges. Basel, 1892, p. 209, pl. iv.

## AGAMIDÆ.

- Draco modiglianii*, n. sp., VINCIGUERRA, Ann. Mus. Genov. (2) xii, 1892, p. 523, Engano I.
- Gonyocephalus beyschlagi*, n. sp., BÆTTGER, Ber. Offenb. Ver. xxix-xxxii, 1892, p. 104, N. E. Sumatra.

## IGUANIDÆ.

- Iguana tuberculata*, L.: on a specimen with reproduced, striped tail; BOULENGER, P. Z. S. 1891, p. 466.
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- Tropidurus*, Wgm.: G. BAUR, Leuckart Festschrift, 1892, pp. 259-277, figs., describes the variations of the Lizards of this genus in the Galapagos Is. *T. barringtonensis*, p. 268, and *jacobii*, p. 269, n. spp., *id. ibid.* *T. bocourtii*, Blgr., = *T. occipitalis*, Ptrs.; GARMAN, Bull. Ess. Inst. xxiv, 1892, p. 94.
- Phrynosoma*, Wgm.: on the ejection of blood from the eyes; O. P. HAY, P. U. S. Nat. Mus. xv, 1892, p. 375; A. L. HERRERA, Le Nat. xiv, 1892, p. 114.
- Iguanavirus leres*, n. sp. (foss.), MARSH, Am. J. Sci. (3) xliii, 1892, p. 451, Laramie formation, Wyoming.

## ANGUIDÆ.

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## VARANIDÆ.

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## TEIIDÆ.

- Ameiva pleii*, n. var. *brachiosquamatus*, COPE, in VERRILL, Tr. Conn. Ac. viii, 1892, p. 352, Dominica, W. Indies [= ? *A. fuscata*, Garm.—REC.]
- Tiaporus*, n. g., like *Ameiva*, but without femoral pores. *T. fuliginosus*, n. sp., COPE, P. Am. Phil. Soc. xx, 1892, p. 132, pl. —, Swan I., off N. E. Coast of Honduras.
- Cnemidophorus*, Wagl.: synopsis of the species, by COPE, Tr. Am. Phil. Soc. xvii, 1892, p. 27, pls. vi-xiii. *C. tessellatus*, *rubidus*, and *multiscutatus*, pp. 36 & 37, Lower California, *C. gularis scalaris*, p. 47, Chihuahua, N. Mexico, *sericeus*, p. 48, Texas, and *semifasciatus*, p. 49, Chihuahua, n. subsp., *id. ibid.* *C. variolosus*, p. 39, Coahuila, and *septemvittatus*, p. 40, California, n. spp., *id. ibid.* *C. lentiginosus*, n. sp., GARMAN, Bull. Ess. Inst. xxiv, 1892, p. 92, Guayaquil, Ecuador.
- Propodinema*, n. g. for *Podinema paranensis*, Scalabrini (foss.), AMBROSETTI, Bol. Ac. Cordoba, x, 1890, p. 410. *P. oligocena*, n. sp. (foss.), *id. t. c.* p. 413, Oligocene, Parana.
- Chamops*, n. g. for a Lacertilian maxillary. *C. segnis*, n. sp. (foss.), MARSH, Am. J. Sci. (3) xliii, 1892, p. 450, fig., Laramie formation of Wyoming [apparently nearest to the *Teiidae*.—REC.]
- Bachia*, Gray, 1845 [not 1849, as stated] should supersede *Cophias*, Fitz., 1826, *nec* Merr., 1820; GARMAN, Bull. Ess. Inst. xxiv, 1892, p. 96.

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- Acanthodactylus vulgaris*, D. & B. : remarks on Portuguese specimens ; FERREIRA, J. Sci. Lisb. (2) ii, 1892, p. 188.
- Holaspis guentheri*, Gray, recorded from East Africa by MATSCHIE, SB. nat. Fr. 1892, p. 110.

## SCINCIDÆ.

- E. D. COPE, J. Morph. vii, 1892, p. 233, gives a synopsis of the genera of *Scincidæ*, in which the following new generic names are introduced :—*Monophyaspsis*, *Oncopus*, *Ollochirus*, *Tridentulus*, *Furcillus*, *Haploscincus*, *Dimeropus*, *Dicloniscus*, *Mesomycterus*.
- Lygosoma africanum*, Gray, redescribed by BEDRIAGA, O Istituto (Coimbra), xxxix, 1892 (p. 23 of reprint). *L. travancoricum*, Bedd., n. var., *palnica* ; BËTTGER, Ber. Offenb. Ver. xxix-xxxii, 1892, p. 72, Pulney Hills, S. India. *L. (Siaphos) relictum*, n. sp., VINCI-GUERRA, Ann. Mus. Genov. (2) xii, 1892, p. 524, Engano I.
- Mococa cœruleocauda*, n. sp., DE VIS, Ann. Queensland Mus. i, 1892, No. 2, p. 12, Sudest I., British New Guinea.
- Eumeces scutatus*, Theob. : note on Transcaspien specimens ; BOULENGER, P. Z. S. 1891, p. 630.
- Ophiomorus brevipes*, Blanf. : note on Transcaspien specimens ; BOULENGER, *t. c.* p. 631.
- Chalcides simonyi*, Stdr., is regarded as a variety of *C. viridanus*, Gravh., by BOULENGER, Ann. N. H. (6) ix, 1892, p. 74 : note by BEDRIAGA, C.R. Congrès Internat. Zool. i, 1892, p. 242. *C. boulengeri*, n. sp., ANDERSON, P. Z. S. 1892, p. 17, pl. i, fig. 1, Duiirat, Tunisia.

## INCERTÆ SEDIS.

- Euposaurus*, n. g. (Jourdan MS.). for small fossil Lizards, which are referred to the Rhynchocephalians ; LORTET, Arch. Mus. Lyon, v, 1892, p. 73. These fossils are regarded by the Recorder as *Lacertilian* ; Ann. N. H. (6) xi, 1893, p. 208. *E. thiollieri*, p. 73, pl. vi, figs. 7-10, and *cerinensis*, p. 75, figs., n. spp., LORTET, *t. c.*, Jurassic, Cerin, France.

## RHIPTOGLOSSA.

- G. A. BOULENGER, Ann. N. H. (6) ix, 1892, p. 72, remarks on some newly-discovered E. African Chameleons, regarding *Chameleon höhnelii*, Stdr., and *C. leikipiensis*, Stdr., as identical with *C. biteniatus*, Fisch., and *C. abbotti*, Stejn., as identical with *C. tuvetensis*, Stdr. The female of the latter species is described.
- Chamaleon fischeri*, Reich. : note by MATSCHIE, SB. nat. Fr. 1892, p. 102. *C. deremensis*, p. 103, *spinosa*, p. 105, and *tenuis*, p. 106, n. spp., *id. ibid.*, Usambara, German E. Africa. *C. isabellinus*, n. sp., GÜNTHER, P. Z. S. 1892, p. 556, pl. xxxiii, fig. 2 (1893), Nyassaland [= *C. dilepis*, Leach.—REC.] *C. (Brookesia) brevicaudatus*, p. 107, and *temporalis*, p. 108, n. spp., MATSCHIE, *t. c.*, Usambara, German E. Africa.
- Rhampholeon platyceps*, p. 556, pl. xxxiv, fig. 1, and *brachyurus*, p. 557, pl. xxxiv, fig. 2, n. spp., GÜNTHER, *t. c.* Nyassaland.

## DOLICHOSAURIA.

- C. GORJANOVIĆ-KRAMBERGER, Glasnik Nadar. Društva, vii, 1892, pp. 74–106, pls. iii & iv, and Rad jugoslav. akad. cix, 1892, pp. 96–123, pls. i & ii, discusses the relations of this group of Reptiles, for which he proposes the name *Ophiosauria*.
- Aigialosaurus*, n. g. for *A. dalmaticus*, n. sp. (foss.), C. GORJANOVIĆ-KRAMBERGER, *ibid.*, Chalk of Lesina I., Dalmatia.
- Pontosaurus*, n. g. for *Hydrosaurus lesinensis*, Kornh. (foss.) C. GORJANOVIĆ-KRAMBERGER, *ibid.*
- Remarks by BOULENGER, Ann. N. H. (6) xi, 1893, pp. 204–207.

## PYTHONOMORPHA.

- G. BAUR, J. Morph. vii, 1892, pp. 1–22, reviews the history of our knowledge of the Mosasauroid skull, and discusses the systematic position of the *Mosasauridae*.
- A. GAUDRY, Mém. Soc. Géol. iii, No. 3, 1892, 13 pp., 2 pls., describes the remains of Mosasaurs hitherto found in France, which are referred to *Liodon anceps*, Ow., *L. compressidens*, Gaudry, *L. mosasauroides*, Gaudry, and *Mosasaurus*, sp.
- Liodon mosasauroides* and *compressidens*, n. spp., GAUDRY, CR. cxv, 1892, p. 304, Chalk, Pau and Sens, France.
- Clidastes velox*, Marsh : description of a nearly complete specimen, with figures of the pectoral and pelvic arches; WILLISTON & CASE, Kansas Quart. i, 1892, p. 17, pls. ii & iii. *C. westii*, n. sp., *id.*, *t. c.* p. 29, pls. iv & v, Cretaceous of Kansas.
- Platecarpus coryphaeus*, Cope : on the skull; BAUR, J. Morph. vii, 1892, p. 1, pls. i & ii.



## OPHIDIA.

BOULENGER, G. A. Catalogue of the Snakes in the British Museum (Natural History). Vol. i, containing the families *Typhlopidae*, *Glauconidae*, *Boidae*, *Ilysiidae*, *Uropeltidae*, *Xenopeltidae*, and *Colubridae* *Aglyphae*, part. London: 1893, 8vo, xiii, 448 pp., 28 pls.

The classification adopted is the same as proposed by the Recorder in 1890. This volume contains descriptions of 523 species, and the enumeration of 3324 specimens.

G. B. BUTLER, P. Z. S. 1892, pp. 477-498, pl. xxviii, deals with the subdivision of the body-cavity in Snakes.

F. LATASTE, Act. Soc. Sci. Chili, ii, 1893, pp. clxvii-clxx, replies to some criticisms of his own work made by the author of the above paper.

F. WERNER, Biol. Centralbl. xii, 1892, pp. 277-280, remarks on the sculpture of the epidermis in Snakes.

S. GARMAN, Science, xx, 1892, p. 16, figs., has further remarks on the origin and evolution of the Ophidian "Rattle."

F. NIEMANN, Arch. f. Nat. lviii, i, 1892, pp. 262-286, pl. xiv, deals with the morphology and physiology of the labial and poison glands of Snakes.

J. J. QUELCH writes on "Venom in Harmless Snakes," and refers in particular to the effect on himself of a bite from the opisthoglyphous *Erythrolamprus venustissimus*. Zool. (3) xvii, 1893, p. 30.

C. J. MARTIN, P. Linn. Soc. N.S.W. (2) vii, 1892, pp. 319-322, and J. R. Soc. N.S.W. xxvi, 1892, pp. 240-264, makes observations on the poisonous constituents of the venom of *Pseudechis porphyriacus*.

L. VAILLANT records observations made in the Garden of Plants on the feeding of Snakes. N. Arch. Mus. (3) iv, 1892, pp. 221-234. Abstract in CR. cxv, 1892, pp. 277-279.

O. P. Hay, P. U. S. Nat. Mus. xv, 1892, pp. 385-397, has notes on the breeding habits, eggs, and young of various North American Snakes.

G. A. BOULENGER, Nat. Sci. i, 1892, pp. 44-49, figs., writes on Marine Snakes.

## TYPHLOPIDÆ.

*Typhlops curtus*, n. sp., DOUGLAS-OGILBY, Rec. Austral. Mus. ii, 1892, p. 23, Gulf of Carpentaria [= *T. ligatus*, Ptrs.—REC.] *T. boettgeri*, p. 39, pl. ii, fig. 6, Madagascar, and *crossii*, p. 52, pl. iii, fig. 5, Niger, n. spp., BOULENGER, Cat. Sn. i, 1893.

## GLAUCONIDÆ.

*Glauconia distantii*, n. sp., BOULENGER, in Distant's Naturalist in the Transvaal, p. 175, fig., Transvaal.

## BOIDÆ.

*Eryx*, Daud., and *Gongylophis*, Wagl. : A synopsis of the species is given by BOULENGER, Ann. N. H. (6) ix, 1892, p. 75. *Gongylophis muelleri*, n. sp., *id.*, *ibid.* p. 74, Sennar. *E. jaculus*, L. : Note on Transcaspiian specimens; BOULENGER, P. Z. S. 1891, p. 631.

## UROPELTIDÆ.

*Rhinophis travancoricus*, n. sp., BOULENGER, Cat. Sn. i, p. 143, pl. ix, fig. 3, 1893, and J. Bomb. N. H. Soc. vii, 1892, p. 318, Travancore.

## COLUBRIDÆ.

*Aglyphæ.*

*Dromicodryas*, n. g. for *Herpetodryas bernieri*, D. & B., BOULENGER, Cat. Sn. i, p. 189, 1893.

*Eutania elegans brunnea* and *lineolata*, n. subsp., COPE, P. U. S. Nat. Mus. xiv, 1892, pp. 654 & 655, California. *E. infernalis vidua*, n. subsp., *id.*, *ibid.* p. 658, California. *E. sirtalis semifasciata*, p. 662, Illinois and Wisconsin, and *trilineata*, p. 664, Oregon and Montana, n. subsp., *id.*, *ibid.* *E. brachystoma*, n. sp., COPE, Am. Nat. xxvi, 1892, p. 964, fig., W. Pennsylvania [= *E. leptcephala*, B. & G.—REC.] *E. aurata*, n. sp., COPE, P. U. S. Nat. Mus. xiv, 1892, p. 659, New Mexico. *E. præocularis*, n. sp., BOCOURT, Le Nat. xiv, 1892, p. 278, Belize, Honduras.

*Tropidonotus infernalis*, Blainv. : On variations in the labial shields; BOCOURT, Bull. Soc. Z. Fr. xvii, 1892, p. 40. *T. natriz*, L. : On the occurrence of the striped variety near Nantes, Brittany; H. & T. PIEL DE CHURCHEVILLE, Bull. Soc. Ouest France, ii, 1892, p. 35, pl. ii. *T. conspicillatus*, Gthr. : redescribed, from Sumatra, by BËTTGER, Ber. Offenb. Ver. xxix-xxxii, 1892, p. 109. *T. tessellatus*, var. *flavescens*, Werner, an albino; WERNER, Verh. z.-b. Wien, xlii, 1892, p. 355. *T. obliquus*, Hallow., and *transversus*, Hallow. : notes by GARMAN, Bull. Ess. Inst. xxiv, 1892, p. 103. *T. petersii*, n. sp., BOULENGER, Cat. Sn. i, p. 225, pl. xiv, fig. i, 1893, Borneo.

*Natrix fasciata pleuralis*, n. subsp.; COPE, P. U. S. Nat. Mus. xiv, 1892, p. 672, Mississippi and Georgia.

*Macropophis*, n. subg. for *Tropidonotus hypomelas*, Gthr., and *T. dendrophips*, Gthr.; BOULENGER, Cat. Sn. i, p. 264, 1893.

*Macropisthodon*, n. g. for *Tropidonotus flaviceps*, D. & B., and allies; BOULENGER, *t. c.* p. 265.

*Storeria victa*, n. sp.; O. P. HAY, Science, xix, 1892, p. 199, Florida.

*Rhabdops*, n. g., for *Ablabes olivaceus*, Bedd., and *A. bicolor*, Gthr.; BOULENGER, Cat. Sn. i, p. 300, 1893.

*Plagiopholis*, n. g., for *P. blakewayi*, n. sp.; BOULENGER, *t. c.* p. 301, pl. xix, fig. 3, Shan States.

- Trirhinopholis*, n. g., for *T. nuchalis*, n. sp.; BOULENGER, Cat. Sn. i, p. 419, pl. xxviii, fig. 1, Shan States.
- Tetralepis*, n. g., allied to *Ablabes*, D. & B., but with the dentition of *Homalosoma*, Wagl., and only four upper labial shields; BETTGER, Ber. Offenb. Ver. xxix-xxxii, 1892, p. 124. *T. fruhstorferi*, n. sp.; *id. t. c.*, p. 125, Tengger Mts., Java.
- Oxyrhabdium*, n. n. for *Stenognathus*, D. & B., *nec* Chaud.; BOULENGER, Cat. Sn. i, p. 302.
- Lycognathophis*, n. g., for *Psammophis seychellensis*, Schleg.; BOULENGER, *t. c.* p. 317.
- Ablabophis*, n. g., for *Coronella rufula*, Licht.; BOULENGER, *t. c.* p. 318.
- Lamprophis fuscus*, n. sp., BOULENGER, *t. c.* p. 322, pl. xx, fig. 4, Cape of Good Hope.
- Gonionotophis*, n. n. for *Gonionotus*, Mocq. *nec* Gray, BOULENGER, *t. c.* p. 323.
- Gonionotus vossii*, n. sp., BETTGER, Zool. Anz. xv, 1892, p. 418, Cameroons.
- Lycophidium meleagris*, p. 337, pl. xxi, fig. 2, Angola, *jacksoni*, p. 340, pl. xxi, fig. 3, E. Africa, and *abyssinicum*, p. 342, pl. xxii, fig. 2, Abyssinia, n. spp., BOULENGER, *t. c.*
- Lycodon striatus*, Shaw, recorded from Transcaspia by BOULENGER, P. Z. S. 1891, p. 631. *L. stormi*, n. sp., BETTGER, Zool. Anz. xv, 1892, p. 418, Celebes.
- Stegonotus heterurus*, n. sp., BOULENGER, Cat. Sn. i, p. 367, pl. xxv, fig. 1, Duke of York I. and New Britain. *S. dumerilii*, n. n. for *Lycodon muelleri*, D. & B.; *id. t. c.* p. 368.
- Zamenis*, Wagl.: a synopsis of the species recorded from S. W. Asia; BOULENGER, P. Z. S. 1891, p. 632. *Z. gemonensis*, Laur.: on its distribution in France; R. MARTIN, Bull. Soc. Ouest France, ii, 1892, p. 149.
- Bascanium semilineatum*, n. sp., COPE, P. U. S. Nat. Mus. xiv, 1892, p. 626, Arizona.
- Philophyllophis*, *Pantherophis*, and *Potamophis*. These *nomina nuda* of Fitzinger are revived by GARMAN, Bull. Ess. Inst. xxiv, 1892, pp. 105 & 108, to replace *Haldea*, B. & G., *Cyclophis*, Gthr., and *Scotophis*, B. & G.
- Coluber enganensis*, n. sp., VINCIGUERRA, Ann. Mus. Genov. (2) xii, 1892, p. 524, Engano I.
- Rhinechis scalaris*, Mich.: on its habits in confinement; H. WERNER, Zool. Gart. xxxiii, 1892, p. 40.
- Dromicus dolioecercus*, n. sp., PERACCA, Boll. Mus. Zool. Tor. vii, 1892, No. 112, pl. i, fig. 1, Madagascar.
- Herpetodryas biserialis*, Gthr., *brunneus*, Gthr., and *reticulatus*, Ptrs.: notes by GARMAN, Bull. Ess. Inst. xxiv, 1892, pp. 85, 90, & 91.
- Dendrophidium dendrophis*, Schl., described and figured by DUGÈS, Nat. Mex. (2) ii, 1892, p. 100, pl. v.
- Dendrophis helena*, n. sp., WERNER, Zool. Anz. xvi, 1893, p. 81, Ceylon.

- Simotes meyerinkii*, Sldr., = *S. octolineatus*, Schn. ; BOULENGER, Ann. N. H. (6) ix, 1892, p. 74.
- Conopsis lineatus*, Kenn.: on variations in the head-shields ; BOCOURT, Bull. Soc. Z. Fr. xvii, 1892, p. 41.
- Cyclophis modestus*, Mart., n. var. *punctulolineatus* ; BÆTTGER, Ber. Senck. Ges. 1892, p. 147, Armenia.
- Pseudocyclophis walteri*, Bttgr.: notè by BOULENGER, P. Z. S. 1891, p. 632.
- Tropidoclonium annulatum*, n. sp., BOCOURT, Le Nat. xiv, 1892, p. 132, Godines, Guatemala.
- Chilomeniscus stramineus fuscatus*, n. subsp., COPE, P. U. S. Nat. Mus. xiv, 1892, p. 595, California.
- Idiopholis*, n. g. Body cylindrical ; head not distinct from neck ; tail very short ; three internasals and two præfrontals ; no loreal, no præocular, no supraocular, no anterior temporal ; nostril between two shields ; eye small, with round pupil ; two pairs of chin-shields, anterior in contact with symphysial ; scales smooth ; anal single ; subcaudals double ; maxillary teeth numerous, equal, very small.
- I. collaris*, n. sp., MOCQUARD, Le Nat. xiv, 1892, p. 35, and Mém. Soc. Zool. v, 1892, p. 191, pl. vii, fig. 1, W. Borneo.
- Dasyptelis scalbra*, L.: on the manner in which it feeds on eggs ; SCLATER, P. Z. S. 1892, p. 476.

### *Opisthoglyphæ.*

- Coniophanes signatus*, n. sp., GARMAN, Bull. Ess. Inst. xxiv, 1892, p. 91, Guayaquil, Ecuador.
- Tachymenis boulengeri*, n. sp., PERACCA, Boll. Mus. Zool. Tor. vii, 1892, No. 112, pl. i, fig. 2, Madagascar.
- Psammoptylax variabilis*, n. sp., GÜNTHER, P. Z. S. 1892, p. 557, pl. xxxv (1893), Nyassaland.
- Psammoptylis longifrons*, Blgr.: note by F. DRECKMANN, J. Bomb. Soc. vii, 1892, p. 406.
- Dipsas trigonata*, Schn., recorded from Transcaspiæ by BOULENGER, P. Z. S. 1891, p. 633.
- Leptodira annulata*, L.: notes by GARMAN, Bull. Ess. Inst. xxiv, 1892, p. 90.
- Tantilla annulata*, n. sp., BÆTTGER, Zool. Anz. xv, 1892, p. 419, Nicaragua.
- Gerardia prevostiana*, Eyd. & Soul., recorded from Ceylon by HALY, J. A. S. (Ceylon), xi, 1892, p. 197.

### *Proteroglyphæ.*

- Hoplocephalus suboccipitalis*, n. sp., DOUGLAS-OGILBY, Rec. Austral. Mus. ii, 1892, p. 23, Moree, New South Wales.

*Dendraspis angusticeps*, Smith, described from S. Thomé by BEDRIAGA, O Istituto, No. 6, 1892. The same Snake is referred to *D. jamesonii*, Trail, by BOCAGE, J. Sci. Lisb. (2) ii, 1892, p. 265.

*Hydrus platurus*, L.: notes by GARMAN, Bull. Ess. Inst. xxiv, 1892, p. 88.

## VIPERIDÆ.

*Causus rostratus*, Gthr., redescribed as *C. rostratus*, n. sp., by MOCQUARD, Le Nat. xvi, 1892, p. 35; the error corrected, p. 64.

*Vipera*, Laur.: J. DE BEDRIAGA, C.R. Congrès Internat. Zool. i, 1892, pp. 236-241, diagnoses the species of the Mediterranean district. *V. berus*, L.: on variations in British specimens; BOULENGER, Zool. (3) xvi, 1892, p. 87. A. B. MEYER & F. HELM, J. Ber. ornith. Beobacht. Stat. Sachsen, vi, pp. 55-63, have compiled interesting information on its occurrence and habits in Saxony. *V. lebetina*, L., n. var. *deserti*; ANDERSON, P. Z. S. 1892, p. 20, pl. i, fig. 3, Dairat, Tunisia.

A. E. FEOKTISTOW's paper on the physiology of the rattle of *Crotalus durissus* is translated in Ann. N. H. (6) xi, 1893, pp. 54-58.

*Crotalus adamanteus ruber*, n. subsp., COPE, P. U. S. Nat. Mus. xiv, 1892, p. 690, N. America.

*Trimeresurus xanthomelas*, Gthr. (= *jerdoni*, Gthr.), figured by GÜNTHER, in Pratt's Snows of Tibet, pl. i, fig. A. *T. okinawensis*, n. sp., BOULENGER, Ann. N. H. (6) x, 1892, p. 302, Great Loo Choo I.

*Provipera bættgeri*, n. g. & sp., for a fossil poison-tooth from the Lower Miocene of Morbach-Biebrich, Germany; KINKELIN, Zool. Anz. xv, 1892, p. 93. Remarks by COPE, t. c. p. 224.

## INCERTÆ SEDIS.

*Coniophis*, n. g., for Ophidian vertebræ, the affinities of which are still unsettled. *C. precedens*, n. sp. (foss.), MARSH, Am. J. Sci. (3) xliii, 1892, p. 450, fig., Ceratops beds (Cretaceous) of Wyoming.

## ORNITHOSAURIA.

S. W. WILLISTON, Kansas Quart. i, 1892, pp. 1-13, pl. i, describes remains of *Pteranodon*, Marsh, and *Nyctodactylus*, Marsh, from Kansas, and proposes to divide the Order into three families, viz.: *Pterodactylidæ* (with subfamilies *Pteranodontinæ* and *Pterodactylinæ*), *Rhamphorhynchidæ*, and *Ornithochiridæ*.

*Pterodactylus cerinensis*, H. v. Mey., described and figured by LORTET, Arch. Mus. Lyon, v, 1892, p. 129, fig., pl. v, figs. 3 & 4.

## DINOSAURIA.

- H. G. SEELEY, Q. J. Geol. Soc. xlviii, 1892, Proc. pp. 108-191, discusses the relations of the Saurischian Dinosaurs.
- O. C. MARSH, Am. J. Sci. (3) xliii, 1892, pp. 81-83, pla. ii & iii, has remarks on the skull of the *Ceratopsida*, and a restoration of the skull of *Torosaurus latus*, Marsh.
- R. LYDEKKER, Q. J. Geol. Soc. xlviii, 1892, p. 375, fig., has a note on some Sauropodous Dinosaurian foot-bones from the Wealden.
- R. BURCKHARDT, JB. Mineral. 1892, ii, pp. 71 & 72, fig., criticizes Marsh's interpretation of the brain of *Triceratops flabellatus*.
- Iguanodon hillii*, n. sp., for a tooth from the Lower Chalk near Hitchin, England; E. T. NEWTON, Geol. Mag. (3) ix, 1892, p. 49.
- Claosaurus annectens*, n. sp., MARSH, Am. J. Sci. (3) xliii, 1892, p. 453, & xlv, 1892, p. 171, pl. ii, and restoration, p. 343, pl. vi, Laramie formation, Wyoming. On its skull and brain; *id. op. cit.* xlv, 1893, p. 83, pla. iv & v.
- Polacanthus*, Hulke: on the pelvis; SEELEY, Q. J. Geol. Soc. xlviii, 1892, p. 81, figs.; LYDEKKER, *t. c.* p. 148, figs.
- Palæoscincus costatus*, Leidy, is regarded as a Stegosaurian tooth by MARSH, Am. J. Sci. (3) xlv, 1892, p. 173. *P. latus*, n. sp., *id. ibid.* pl. iii, fig. 2, Ceratops beds, Wyoming.
- Stegosaurus unguatus*, Marsh: tooth figured; MARSH, *ibid.* pl. iv, fig. 1.
- Laelaps incrassatus*, Cope: description of the skull; COPE, P. Am. Phil. Soc. xxx, 1892, p. 240.
- Ceratopsaurus nasicornis*, Marsh: restoration by MARSH, Am. J. Sci. (3) xlv, 1892, p. 347, pl. vii.
- Anchisaurus colurus*, Marsh: further notes and figures by MARSH, Am. J. Sci. (3) xliii, 1892, p. 543, pls. xv & xvi, & xlv, 1893, p. 169, pl. vi. *A. solus*, n. sp., *id. op. cit.* xliii, p. 545, Trias, Connecticut River.
- Ornithomimus*, Marsh, should probably be referred to the *Theropoda*; MARSH, Am. J. Sci. (3) xliii, 1892, p. 451. *O. sedens*, p. 451, and *minutus*, p. 452, n. spp., *id. ibid.*, Ceratops beds, Wyoming.
- Aublysodon*, Leidy: remarks by MARSH, Am. J. Sci. (3) xlv, 1892, p. 174. *A. amplus*, p. 174, and *cristatus*, p. 175, n. spp., MARSH, *t. c.*, Laramie formation, North America.

## EMYDOSAURIA.

- W. KÜKENTHAL, Morph. JB. xix, 1892, pp. 42-55, pl. ii, describes the skeleton of the manus in young Crocodiles, and draws special attention to the hyperphalangy in the fourth and fifth fingers, which shows that the existing Crocodilians are derived from forms more thoroughly adapted to aquatic life.
- C. ROESE, Verh. Anat. Ges. 1892, pp. 225-227, remarks on the development of the teeth in Crocodiles.

- C. P. SLUITER, *Anat. Anz.* vii, 1892, pp. 540-545, figs., writes on Jacobson's organ in *Crocodylus porosus*.
- Tomistoma*, S. Müll.: on fossil remains from the Miocene of Nurri, Italy; LOVISATO, *Atti Acc. Pontif. Lincei* (5) i, 1892, *Rend.* p. 436.
- Rhamphostoma neogea*, Burm. (foss.): note by AMBROSETTI, *Bol. Ac. Cordoba*, x, 1890, p. 414.
- Leptorrhamphus*, n. g., near *Gavialis*, for *L. entrerrianus*, n. sp. (foss.); AMBROSETTI, *t. c.* p. 417, Oligocene, Parana.
- Oxydonsaurus*, n. g., near *Gavialis*, for *O. striatus*, n. sp. (foss.); AMBROSETTI, *t. c.* p. 419, Oligocene, Parana.
- Proalligator*, n. g. for *Crocodylus australis*, Bravard (foss.); AMBROSETTI, *t. c.* p. 420.
- Atoposaurus jourdani*, H. v. Mey. (foss.), described and figured by LORTET, *Arch. Mus. Lyon*, v, 1892, p. 92, figs., pl. xi, figs. 9-16.
- Alligatorellus beaumonti*, Gerv. (foss.), described and figured; LORTET, *t. c.* p. 99, pls. ix bis. & xi, figs. 1-8.
- Alligatorium meyeri*, Gerv. (foss.), described and figured; LORTET, *t. c.* p. 108, pl. x.
- Gavialinum*, n. g. (*Gavialidæ* ?) for *G. rhodani*, n. sp. (foss.); LORTET, *t. c.* p. 122, pl. viii, Bathonian, Villebois, France.
- Crocodyleimus robustus*, Gerv. (foss.), described and figured by LORTET, *t. c.* p. 114, pl. ix.

## CHELONIA.

- G. BAUR, *Anat. Anz.* vii, 1892, pp. 206-211, figs., has further remarks on the carpus of Chelonians.
- E. BATAILLON, *Ann. Soc. L. Lyon* (2) xxxix, 1892, pp. 81-86, pl. —, has a contribution to the study of the arterial circulation in the land Tortoise.
- L. WILL, *Biol. Centralbl.* xii, 1892, pp. 182-192, figs., writes on gastrulation in the Chelonians.
- K. MITSUKURI's second and third contributions to the embryology of Reptilia, *J. Coll. Sci. Japan*, iv, 1891, pp. 1-53, pls. i-x, & v, 1892, pp. 35-52, pls. ii-iv, deals with the foetal membranes of *Chelonia*, the researches being based on *Clemmys japonica* and *Trionyx japonicus*.
- Trionyx melitensis*, Lyd. (foss.), = ? *T. ragusensis*, De Greg. 1883; DE GREGORIO, *Nat. Sicil.* xi, 1892, p. 182. *T. leucopotamicus*, n. sp. (foss.), COPE, *Contr. Canad. Pal.* iii, 1891, p. 5, pl. i, figs. 8 & 9, Lower Miocene, Canada. *T. gemmellaroi*, p. 11, pls. i & v, figs. 2-5, *capellinii*, p. 26, pls. ii & iii, and *affinis*, p. 47, pl. v, fig. 1, n. spp. (foss.); NEGRI, *Mem. Soc. Ital. Sci. Nat.* (3) viii, 1892, No. 7, Eocene of Monte Bolca.
- Miolania ovenii*, A. S. Woodw. (foss.): on some remains from New S. Wales; R. ETHERIDGE, JUN, *Rec. Austral. Mus.* ii, 1893, p. 39.

- L. LORTET, Arch. Mus. Lyon, v, 1892, p. 5, proposes a new family, "*Halmyrachelides*," for *Idiuchelys*, H. v. Mey., and *Hydropelta*, H. v. Mey.
- Idiuchelys fitzingeri*, H. v. Mey. (foss.), described and figured by LORTET, t. c. p. 7, pl. i, & pl. ii, figs. 1 & 2.
- Hydropelta meyeri*, H. v. Mey. (foss.), described and figured by LORTET, t. c. p. 18, pl. iii, figs. 3-5.
- Eurysternum crassipes*, Wagn. (foss.), described and figured; LORTET, t. c. p. 24, pl. ii, figs. 4-7, and pl. ii bis.
- G. BAUR, Zool. Anz. xv, 1892, pp. 155-159, remarks on various genera of *Testudinidae*, and insists on the distinctive characters of the families *Emydidae* and *Testudinidae*.
- Testudo græca*, L.: on its habits; G. RUMPF, Zool. Gart. xxxiii, 1892, p. 260; A. GIRTANNER, t. c. p. 349. *T. turgida*, n. sp. (foss.), COPE, P. Am. Phil. Soc. xx, 1892, p. 27, Upper Cenozoic of Texas.
- Emys*, Dum.: G. BAUR, op. cit. xxx, 1892, pp. 40 & 245, discusses which species should be regarded as the type of this genus.
- Cistudo cinosternoides*, Gray: notes by GARMAN, Bull. Ess. Inst. xxiv, 1892, p. 99.
- Cinosternum flavescens*, Ag.: note by COPE, P. Ac. Philad. 1892, p. 333.

## ICHTHYOSAURIA.

- E. FRAAS, JB. Mineral. 1892, ii, pp. 87-90, figs., describes and figures a specimen of *Ichthyosaurus quadriscissus*, Qu., showing the contours of the soft parts, including dorsal and caudal fins.
- A propos of Fraas's discovery, L. DOLLO, P.-v. Soc. Belg. Géol. vi, 1892, pp. 167-174, figs., discusses the origin of the dorsal fin in these Reptiles.
- R. LYDEKKER, Nat. Sci. i, 1892, pp. 514-521, reviews the various accessions to our knowledge of the *Ichthyosauria*.
- J. W. HULKE, P. R. Soc. lii, 1892, pp. 233-255, has remarks on the Ichthyosaurian shoulder-girdle.
- W. KÜKENTHAL, JB. Mineral. 1892, i, pp. 161-166, remarks on the hyperphalangy of Ichthyosaurs as compared to that of Cetaceans.
- Ichthyosaurus numismalis*, n. sp., E. FRAAS, JH. Ver. Württ. xlviii, 1892, p. 22, pl. i, Lias, Württemberg. *I. burgundia*, Gaudry, described and figured by GAUDRY, Bull. Soc. Autun, v, 1892, p. 365, pl. xv.

## PLESIOSAURIA.

- H. G. SEELEY, P. R. Soc. li, 1892, pp. 119-151, figs., deals with the nature of the shoulder-girdle and clavicular arch in the *Plesiosauria*, which he divides into two groups, termed *Dicranopleura* and *Cercidopleura*.



The subject further discussed by J. W. HULKE, P. R. Soc. lii, 1892, pp. 233-255, figs.

H. G. SEELEY, Q. J. Geol. Soc. xlviii, 1892, pp. 586-604, discusses the characters and systematic position of the *Mesosauria*, which sub-order he divides into two groups: *Proganosauria* and *Neusticosauria*.

*Mesosaurus tenuidens*, Gerv., described and figured; SEELEY, *t. c.* p. 591, pl. xviii, fig. 5. *M. pleurogaster*, n. sp., *id. t. c.* p. 587, pl. xviii, figs. 1-4, Kimberley, S. Africa.

*Eunotosaurus*, n. g., probably referable to the *Mesosauria*. *E. africanus*, n. sp., SEELEY, *t. c.* p. 583, figs., Beaufort West, S. Africa.

*Parthanosaurus*, n. g., allied to *Nothosaurus*, for *P. zittelii*, n. sp., SKUPHOS, Zool. Anz. xvi, 1893, p. 67, Trias of Vorarlberg.

## THECODONTIA.

*Belodon*, H. v. Mey., and *Aëtosaurus*, Fraas, are regarded by SEELEY, Q. J. Geol. Soc. xlviii, 1892, Proc., p. 189, as primitive Cetiosaurians. *Episcoposaurus haplocerus*, n. sp., COPE, P. Am. Phil. Soc. xx, 1892, p. 129, Trias of Texas.

## ACROSAURIA.

*Pleurosaurus goldfussi*, H. v. Mey. (foss.), described and figured by LORTET, Arch. Mus. Lyon, v, 1892, p. 81, figs., pl. vii. The Recorder points out, Ann. N. H. (6) xi, 1893, p. 208, that this Lizard should be regarded as the type of a distinct order of Reptiles, combining characters of the Proterosaurian *Rhynchocephalia* and *Squamata*, for which the name *Acrosauria*, H. v. Meyer, 1860, may be used.

## RHYNCHOCEPHALIA.

L. DOLLO, Bull. Soc. Belg. Géol. v, Mém. 1892, pp. 151-199, pls. vi-viii, completes his description of *Champsosaurus*, and discusses its position among the Rhynchocephalians, which he pronounces to be near the *Proterosauriæ*.

G. A. BOULENGER gives a revised scheme of the classification proposed by him in 1891; the *Champsosauriæ* are transferred to the sub-order *Proterosauria*, and the *Sauranodontidæ* are added to the sub-order *Rhynchocephalia vera*; Ann. N. H. (6) xi, 1893, p. 209.

*Diopseus*, Cope (foss.), is regarded as a Rhynchocephalian, somewhat allied to *Palæohatteria*, Credn.; COPE, Tr. Am. Phil. Soc. xvii, 1892, p. 15.

*Homoeosaurus jourdani*, p. 69, pl. vi, figs. 1-5, and *rhodani*, p. 72, pl. iv, fig. 6, n. spp. (foss.), LORTET, Arch. Mus. Lyon, v, 1892, Jurassic, Corin, France.

*Sauranodon incisivus*, Jourdan (foss.), [= *Saphosaurus thollierii*, H. v. Mey.], described and figured by LORTET, Arch. Mus. Lyon, v, p. 30, figs., pls. iiter, iii, iv, & v. A new family, *Sauranodontidæ*, is established by LORTET for its reception.

## ANOMODONTIA.

- H. G. SEELEY, Phil. Tr. clxxxiii (B), 1892, pp. 311-370, pls. xvii-xxiii, describes remains of *Pariosaurus* and *Procolophon*, at the same time discussing the classification of the *Anomodontia*, which are now divided into six groups.
- G. B. HOWES remarks on the shoulder-girdle of *Keirognathus*, Seeley, and other Dicynodonts; J. Anat. Phys. xxvi, 1892, pp. 403-405.
- Gordonia*, n. g., allied to *Dicynodon*, Ow., for *G. traquairi*, *huxleyana*, *duffiana*, and *juddiana*, n. spp.; E. T. NEWTON, P. R. Soc. lii, 1892, p. 389, Trias of Elgin, Scotland.
- Geikia*, n. g., allied to *Ptychognathus*, Ow., for *G. elginensis*, n. sp., E. T. NEWTON, t. c. p. 390, Elgin.
- Elginia*, n. g., nearest allied to *Pariosaurus*, Ow., for *E. mirabilis*, n. sp.; E. T. NEWTON, t. c. p. 391, Elgin.
- Parciasaurus bairdi*, n. sp., SEELEY, t. c. p. 322, Trias, Karroo Group, S. Africa.

## BATRACHIA.

- O. BOETTGER issues a catalogue of the collection of Batrachians in the Senckenberg Museum. Frankfort a/M.: 1892, 8vo, 73 pp.
- W. L. SCLATER has compiled a list of the Batrachians in the Indian Museum, Calcutta. London: 1892, 8vo, 43 pp.
- O. S. STRONG, Anat. Anz. vii, 1892, pp. 467-471, writes on the structure and homologies of the cranial nerves of the Batrachians, as determined by their peripheral distribution and internal origin.
- H. REX, Morph. JB. xix, 1892, pp. 295-311, pl. xi, contributes to the morphology of the cerebral veins in Batrachians.
- L. EDINGER, Abh. Senck. Ges. xviii, 1892, 55 pp., 5 pls., has a memoir on the brain of Batrachians. Abstract in Anat. Anz. vii, 1892, pp. 472-476.
- A. B. MACALLUM, Tr. Can. Inst. ii, 1892, pp. 221-260, pl. i, has studies on the blood of Batrachians.
- M. C. DEKHUYSEN, Verh. Anat. Ges. 1892, pp. 90-103, pl. i, writes on the same subject.
- H. GRIEBBACH, Leuckart Festschrift, 1892, pp. 215-227, pl. xxiii, further contributes to the knowledge of the blood-corpuscles of Batrachians.
- O. C. FARRINGTON, Tr. Conn. Ac. viii, 1892, pp. 309-314, pl. xxiv, describes the kidney, with nephrostomes in Batrachians.

- H. F. E. JUNGENSEN, Vid. Medd. 1892 (1893), pp. 32-72, pls. ii & iii, writes on the development of the Müllerian duct in Batrachians.
- A. C. EYCLESYMER, J. Morph. viii, 1893, pp. 189-193, figs., has a note on the development of the optic vesicles in Batrachians.
- H. H. FIELD remarks on the metameric development of the kidney in Batrachians; Verh. Deutsch. Zool. Ges. ii, 1892, pp. 113-117.
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- G. BORN, Anat. Anz. vii, 1892, pp. 772-781 & 803-811, figs., writes on the first phases of the development of the Batrachian ovum.
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- H. S. GREENOUGH, Bull. Soc. Z. Fr. xvii, 1892, pp. 57-59, writes on the same subject.
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- G. A. BOULENGER, Nat. Sci. i, 1892, pp. 185-190, figs., reviews our knowledge of the poisonous secretion of Batrachians.
- K. KNAUTH, Zool. Anz. xv, 1892, pp. 20-23, records his experiments on the influence of temperature on Batrachians.

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- H. ADOLPHI, Morph. JB. xix, 1892, pp. 315-375, figs., pl. xii, writes on variations in the spinal nerves and vertebral column of *Bufo viridis*.
- C. HASSE, Z. wiss. Zool. lv, 1892, pp. 252-264, pl. xii, writes on the development of the vertebral column in tailless Batrachians.
- E. GAUPP, Verh. Anat. Ges. 1892, pp. 183-190, writes on the endocranium of *Rana temporaria*.
- D. BERTELLI, Monit. Zool. Ital. iii, 1892, pp. 203-207, remarks on the tympanic membrane of *Rana esculenta*. French translation in Arch. Ital. Biol. xviii, 1893, pp. 458-462.
- A. E. SMIRNOW has a paper, in Russian, on the nerves of *Rana* and *Bufo*; Protok. obsch. estest. Kazan, 1889-90, Append. No. 112 (1890), 6 pp.
- W. BIEDERMANN, Arch. Ges. Phys. li, 1892, pp. 455-508, pl. xi, investigates the movements of the chromatophores in tailless Batrachians.
- G. A. BOULENGER, P. Z. S. 1891, pp. 593-627, pls. xlv-xlvii, gives descriptions and figures of the Tadpoles of the European Batrachians, with a key to their identification.
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- L. CAMERANO, Boll. Mus. Zool. Tor. vii, 1892, No. 140, writes on the action of running water and of light on the development of tailless Batrachians.
- W. N. PARKER reports on Experiments on the Respiration in Tadpoles of *Rana temporaria*, Rep. Brit. Ass. 1891, p. 694.
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- H. DEHNER, Verh. Ges. Würzb. (2) xxvi, 1892, pp. 1-18, pl. i, has a paper on the segmentation of the frog-ovum.
- O. HERTWIG, Arch. Mikr. Anat. xxxvii, 1892, pp. 353-503, pls. xvi-xx, has a paper on malformed frog-eggs.

### RANIDÆ.

- Rana*, L. : L. v. MÉHELÿ, Math. term. köz. xxv, 1892, pp. 1-63, pls. i-viii, has an illustrated memoir (in Hungarian) on the brown Frogs of Hungary (*R. temporaria*, L., *arvalis*, Nilss., and *agilis*, Thom.). *R. temporaria*, L. : on its occurrence in Ireland ; SCHARFF, Irish Nat. i, 1893, p. 1. *R. pretiosa*, B. & G. : Notes by TEST, Bull. U. S. Fish. Comm. 1891, p. 58 (1892). *R. agilis*, Thom. : on its occurrence in the Main district ; LEYDIG, Zool. Gart. xxxiii, 1892, p. 321. *R. camerani*, Blgr., and *R. macronemis*, Blgr. : notes by BËTTGER, Ber. Senck. Ges. 1892, pp. 134 & 136. *R. esculenta*, L. : on blue specimens ; LEYDIG, Zool. Gart. xxxiii, 1892, p. 1. *R. newtoni*, Bocage : redescribed by BEDRIAGA, O Istituto (Coimbra), xxxix, 1892, p. 2 of reprint. *R. masoni*, Blgr. : redescribed by BËTTGER, Ber. Offenb. Ver. xxix-xxxii, 1892, p. 138. *R. vicina*, Stol. : p. 342, pl. xxiv, fig. 1, and *granulosa*, And., p. 346, redescribed by W. L. SCLATER, P. Z. S. 1892, who also has notes on *R. hascheana*, Stol., p. 344, *R. pulla*, Stol., p. 344, *R. gracilis*, Gravh., p. 345, *R. nigrovittata*, Blyth, p. 345, and *R. erythræa*, Schleg., p. 345. *R. assamensis*, p. 343, pl. xxiv, fig. 2, Khasi Hills, *limborgi*, p. 344, fig. 3, Tenasserim, and *tenasserimensis*, p. 345, fig. 4, n. spp., W. L. SCLATER, t. c. *R. holsti*, n. sp., BOULENGER, Ann. N. H. (6) x, 1892, p. 302, Great Loo Choo I. *R. octoplicata*, p. 83, United States [= *areolata*, B. & G.—REC.], and *schlueteri*, p. 84, Borneo, n. spp., WERNER, Zool. Anz. xvi, 1893. *R. microdisca*, n. sp., BËTTGER, Ber. Offenb. Ver. xxix-xxxii, 1892, p. 137, Tengger Mts., Java. *R. nyassæ*, n. sp., GÜNTHER, P. Z. S. 1892, p. 558 (1893), Nyassaland. *R. schmackeri*, n. sp., BËTTGER, Katal. Senckenb. p. 11, 1892, Ichang, China. *R. oatesii*, n. sp., BOULENGER, Ann. N. H. (6) ix, 1892, p. 141, pl. ix, Toungoo, Burma. *R. albofrenata*, n. sp., F. MÜLLER, Festschr. Nat. Ges. Basel, 1892, p. 197, pl. iii, fig. i, Madagascar.
- Cornufer boulengeri*, n. sp., BËTTGER, Katal. Senckenb. p. 18, 1892, New Britain.

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- Chiromantis rufescens*, Gthr. : on the 'nest' of a West African Tree Frog, probably of this species ; W. J. HOLLAND, Am. Nat. xxvii, 1893, p. 67.
- Iralus cinerascens*, Stol., and *I. punctatus*, And., (= *glandulosus*, Jerd.) : note on the type specimens ; W. L. SCLATER, P. Z. S. 1892, p. 347.
- I. aurifasciatus*, Schleg. : redescribed by BÆTTGER, Ber. Offenb. Ver. xxix-xxxii, 1892, p. 142. *I. schmackeri*, n. sp., *id.* Katal. Senckenb. p. 17, 1892, Mindoro, Philippines.
- Rappia thomensis*, Bocage : redescribed by BEDRIAGA, O Istituto (Coimbra), xxxix, 1892 (p. 5 of reprint). *R. mollerii*, n. sp., *id. t. c.* p. 13, S. Thomé, Gulf of Guinea.

## ENGYSTOMATIDÆ.

- Phryniscus laevis*, Gthr., n. var. *exigua*, BÆTTGER, Katal. Senckenb. p. 22, 1892, Andes of Ecuador.
- Cophizalus*, n. g., allied to *Callula*, for *C. geislerorum*, n. sp., BÆTTGER, Katal. Senckenb. p. 24, 1892, New Guinea.
- Chaperina*, n. g. : Tongue elliptic, free behind ; no vomerine teeth : a transverse dermal fold on the palate in front of the œsophagus ; tympanum distinct ; digits free, dilated into small disks ; distal phalanx T-shaped ; outer metatarsals bound together ; pupil horizontal ; transverse processes of sacrum rather strongly dilated ; præcoracoids present, very slender ; sternum cartilaginous ; no omosternum. *C. fusca*, n. sp., MOCQUARD, Le Nat. xiv, 1892, p. 35, and Mém. Soc. Zool. v, 1892, p. 194, pl. vii, fig. 2, Sintang, Borneo.

## DYSCOPHIDÆ.

- Anodonthyla*, n. g. : no teeth on palate ; toes free ; pupil horizontal.
- A. boulengeri*, n. sp., F. MÜLLER, Festschr. Nat. Ges. Basel, 1892, p. 198, pl. iii, fig. 2, Madagascar.
- Fanchonia*, n. g., referred to the *Dyscophidæ*, for *F. elegans*, n. sp., WERNER, Zool. Anz. xvi, 1893, p. 82, Tropical Africa ?

## CYSTIGNATHIDÆ.

- Calyptocephalus gayi*, D. & B. *Lucerta caudiverbera*, L., is based on the larva of this frog ; LATASTE, Act. Soc. Sci. Chili, i, 1892, p. 7.
- Hylodes lehmanni*, p. 26, Colombia, *fleischmanni*, p. 27, Costa Rica, and *W-nigrum*, p. 28, Andes of Ecuador, n. spp., BÆTTGER, Katal. Senckenb. 1892.

## BUFONIIDÆ.

- Pseudophryne dendyi*, p. 62, North Gippsland, Victoria, and *semimar-morata*, p. 63, S. E. Victoria, n. spp., LUCAS, P. R. Soc. Vict. (2) iv, 1892.
- Nectophryne hosii*, n. sp., BOULENGER, P. Z. S. 1892, p. 508, pl. xxx, fig. 2, Mt. Dulit, Borneo.
- Bufo asper*, Gravh.: on a remarkable specimen from Borneo; BOULENGER, P. Z. S. 1892, p. 508. *B. fergusonii*, n. sp., BOULENGER, J. Bomb. N. H. Soc. vii, 1892, p. 317, Travancore.
- Rhinophrynus dorsalis*, D. & B.: description and figure of the skeleton, by A. DUGÈS, Nat. Mex. (2) ii, 1892, p. 98, pl. v.

## HYLIDÆ.

- Hyla amboinensis*, 'Horst: notes by BÆTTGER, Ber. Offenb. Ver. xxix-xxxii, 1892, p. 156. *H. albolimbata*, p. 40, S. America, *columbiana*, p. 41, Colombia, and *prosoblepon*, p. 45, Costa Rica, n. spp., BÆTTGER, Katal. Senckenb. 1892. *H. chloris*, n. sp., BOULENGER, P. Linn. Soc. N.S.W. (2) vii, 1892, p. 403, New South Wales. *H. (Trachycephalus) angustifrons*, n. sp., WERNER, Zool. Anz. xvi, 1893, p. 83, Brazil [= ? *H. nigromaculata*, Tsch.—REC.].
- Nototrema weinlandii*, pp. 175 & 837, pl. i, Ecuador, and *bolivianum*, pp. 176 & 840, pl. ii, Bolivia, n. spp., STEINDACHNER, Anz. Ak. Wien, 1892, and SB. Ak. Wien, ci, i, 1892.

## PELOBATIDÆ.

- Spea laticeps*, n. sp., COPE, Am. Nat. xxvii, 1893, p. 155, fig., Texas.
- Leptobruchium carinense*, Blgr.: on a specimen with vomerine teeth; W. L. SCLATER, P. Z. S. 1892, p. 347.

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- K. W. SCHLAMPP, Z. wiss. Zool. iii, 1892, pp. 537-557, pl. xxi, investigates the structure of the eye of *Proteus anguineus*.
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- Molge palmata*, Schn.: Portuguese specimens are referred to this species by FERREIRA, J. Sci. Lisb. (2) ii, 1892, p. 195 [belong, no doubt, to *M. bosca*, Lat.—REC.]. *M. rusconii*, Gené: on the pairing; BEDRIAGA, Zool. Anz. xvi, 1893, p. 102.
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- Amblystoma tigrinum*, Green: G. HAHN, Rev. Quest. Sci. (2) i, 1892, pp. 178-205, reviews our knowledge of the Axolotl and its metamorphoses; Spanish translation in Nat. Mex. (2) ii, 1892, pp. 218-230. J. M. BERTOLDO, Le Nat. xiv, 1892, p. 15, records notes on the growth of Axolotls in confinement.
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## APODA.

P. & F. SARASIN, *Anat. Anz.* vii, 1892, pp. 812-815, have further remarks on the organ of hearing in Cæcilians.

*Dermophis thomensis*, Bocage, redescribed by BEDRIAGA, *O Istituto (Coimbra)*, xxxix, 1892 (p. 13 of reprint).

*Siphonops paulensis*, n. sp., BËTTGER, *Katal. Senckenb.* p. 62, 1892, S. Paulo, Brazil.

## STEGOCEPHALA.

This Order is proposed to be transferred to the Class *Reptilia*; H. G. SEELEY, *Phil. Tr.* clxxxiii (B), 1892, p. 367.

*Ichnotherium cotta*, n. n. for foot-prints from the Permian of Friedrichroda, Thuringia; POHLIG, *Leuckart Festschrift*, 1892, p. 60, fig., pl. vii, fig. 1.





## V. PISCES.

BY

G. A. BOULENGER.

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This subject is treated as follows, viz. :—

- I. TITLES OF WORKS AND PAPERS ARRANGED  
ALPHABETICALLY ACCORDING TO AUTHORS' NAMES.
  - II. GENERAL SUBJECT.
  - III. FAUNÆ.
  - IV. PALÆONTOLOGY.
  - V. REFERENCES, ARRANGED SYSTEMATICALLY.
- 

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## II.—GENERAL SUBJECT.

W. HAACKE & PECHUEL-LOESCHE have revised the volume dealing with Fishes in the new (third) edition of Brehm's Tierleben ; Leipzig & Vienna : 1892, 8vo, 517 pp., 146 figs., 11 pls., 1 map.

G. B. HOWES, *Rep. Brit. Ass.* 1891, p. 694 (1892), expresses his views on the arrangement of Fishes (*cf. Zool. Rec.* xxviii, *Pisces*, p. 2).

E. D. COPE, *P. Am. Phil. Soc.* xxx, pp. 280 & 281, figs., remarks on the phylogeny of the Fishes.

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A. S. WOODWARD, *Nat. Sci.* i, 1892, pp. 28-35, figs., gives a summary of the state of our knowledge of the evolution of fins.

O. JAEKEL, *SB. nat. Fr.* 1892, pp. 80-92, also discusses the evolution of the limbs of Fishes.

C. HASSE, *Anat. Anz.* viii, 1893, pp. 288 & 289, summarises his views on the development and phylogeny of the vertebral column.



H. KLAATSCH, *Morph. JB.* xix, 1893, pp. 649-680, figs., pl. xxvi, contributes to the morphology and embryology of the vertebral column in Fishes.

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C. RABL, *Verh. Anat. Ges.* 1892, pp. 104-135, figs., pl. ii, discusses the metamery of the head in Vertebrates.

H. AYERS, *J. Morph.* vi, 1892, pp. 1-360, pls. i-xii, has a contribution to the morphology of the Vertebrate ear.

G. B. HOWES, *Rep. Brit. Ass.* 1891, p. 702, remarks on the customary methods of describing the gills of Fishes. Gills of the Marsipobranch-Plagiostome type are, for anatomical purposes, termed *Cystobranchiæ*, and those of the higher Teleosteans *Pectinobranchiæ*.

J. A. RYDER, *P. Ac. Philad.* 1892, pp. 219-224, figs., and *Ann. N. H.* (6) xi, 1893, pp. 243-248, figs., writes on the mechanical genesis of the scales of Fishes, and their segmental relation to the hard and soft parts.

C. MORRIS, *Am. Nat.* xxvi, 1892, pp. 975-986, writes on the air-bladder and the origin of lungs.

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A. AGASSIZ, *Bull. Mus. C. Z.* xxiii, 1892, pp. 189-193, 1 pl., has a preliminary note on some modifications of the chromatophores of Fishes.

F. LEYDIG, *Biol. Centralbl.* xii, 1892, pp. 205-221, writes on the dermal excrescences of breeding Fishes, and, pp. 444-449, on the structure of the skin.

J. T. CUNNINGHAM, *Rep. Tr. Devon Ass.* xxiv, 1892, pp. 470-475, reviews recent additions to our knowledge of the life-history of some Devonshire Sea Fishes.

C. BOHR, *C.R.* cxiv, 1892, pp. 1560-1562, records his experiments on the secretion of oxygen in the air-bladder of Fishes.

H. HAASE, *Zool. Anz.* xv, 1892, p. 26, and F. DAHL, *t. c.* pp. 106-108, further discuss the movements of flying Fishes.

F. LATASTE, *Actes Soc. Sci. Chili*, i, 1892, pp. xxxviii & xxxix, remarks on Fishes expelled from artesian wells in France and the Algerian Sahara.

L. VAILLANT, *Bull. Soc. Géol.* (3) xx, 1892, pp. 111-113, remarks on stones transported in the digestive tract of Fishes.

L. CUÉNOT, *Le Nat.* xiv, 1892, pp. 53-57, figs., publishes a popular article on commensalism and parasitism among Fishes.

## III.—FAUNÆ.

## EUROPE.

"Vertebrate Fauna of Argyll and the Inner Hebrides" (Edinburgh : 1892, 8vo); J. A. HARVIE-BROWN & T. E. BUCKLEY devote pp. 219-234 to Fishes.

Solway : R. SERVICE, *Ann. Scott. N. H.* i, 1892, pp. 18-25, gives a list of the Freshwater Fishes of the Solway area. A few additions to the list by H. MAXWELL, *l. c.* pp. 103 & 104.

Isle of Man : P. M. C. KERNODE, *Zool.* (3) xvii, 1892, pp. 65-70, enumerates the Fishes.

"Vertebrate Fauna of Lakeland;" H. A. MACPHERSON deals with the Fishes on pp. 466-526.

"The Fauna and Flora of Gloucestershire" (Stroud : 1892, 8vo); C. A. WITCHELL & W. B. STRUGNELL, *Pisces*, pp. 149-166.

Scandinavia : "Sveriges och Norges Fiskar" (Upsala : 8vo, 3 vols., 1884-91), by W. LILLJEBORG; fascicle 8, concluding the work, was issued in 1891.

Russia in Europe : revised list of the Fishes; O. GRIMM, *Arch. f. Nat.* lviii, 1, 1892, pp. 195-207.

France : Manual of French Ichthyology, E. MOREAU (Paris : 1892, 8vo, 650 pp., 3 pls); criticised by C. BELLOTTI, *Atti Soc. Ital.* xxxiv, 1892, pp. 19-35.

Dep. Haute Marne : Faune de la Haute Marne, Poissons; A. DAGUIN & C. BARDIES (Paris : 1892, 16mo, 89 pp.).

Dep. Indre : R. MARTIN & R. ROLLINAT, *Mém. Soc. Zool.* v, 1892, pp. 38-45, enumerate the Fishes.

Germany : ERWIN SCHULZE brings out a new, illustrated edition of his synopsis of the Fishes of Germany (Königsberg : 1892, 8vo, 94 pp., 49 figs.).

River Main : L. BRUXBAUM, *Zool. Gart.* xxxiii, 1892, pp. 184-188, reports on the migrations of Fishes in this river during the spring of 1892.

Bodensee : C. B. KLUNZINGER, *Bodenseefische, deren Pflege und Fang* (Stuttgart : 1892, 8vo, xii & 232 pp., figs.).

Württemberg : on the introduction of foreign Fish to; SIEGLIN, JH. *Ver. Württ.* xlviii, 1892, pp. xxvii-xli.

Piedmont : E. FESTA, *Bol. Mus. Zool. Tor.* vii, 1892, No. 129, describes the Fishes.

Greece : H. A. HOFFMAN & D. S. JORDAN, *P. Ac. Philad.* 1892, pp. 230-285, publish a catalogue of the Fishes, with notes on the names now in use and those employed by classical authors.

## ASIA.

Mangyschlak and Busatchi : A. OSTROUMOFF, *Protok. obsch. estest. Kazan*, 1889-90, Append. No. 113 (1890), gives an account, in Russian, of a zoological excursion to.

Upper Yang-tse-Kiang and Province Sze-Chuen : A. GÜNTHER gives a list of the Fishes collected by Mr. A. E. Pratt ; Appendix ii to PRATT'S "Snows of Tibet" (London : 1892, 8vo), pp. 243-250, pls. i-iv.

Upper Tonkin : L. VAILLANT, C.R. cxiv, 1892, pp. 1028 & 1029, and Bull. Soc. Philom. (8) iv, 1892, pp. 125 & 127, records some Fishes.

Muscat, East Coast of Arabia : G. A. BOULENGER, P. Z. S. 1892, pp. 133-136, has a third report on the Fishes obtained by Surgeon-Major Jayakar.

Laccadive Sea, Gulf of Manaar, and Coast of Coromandel : A. ALCOCK, Ann. N. H. (6) x, pp. 345-365, pl. xviii, reports on the bathybial Fishes obtained by the "Investigator," during the season of 1891-92.

### AFRICA.

Congo : A. PERUGIA, Ann. Mus. Genov. (2) x, 1892, pp. 967-977, figs., reports on a collection of Fishes.

### AMERICA.

Montana and Wyoming : B. H. EVERMANN, Bull. U. S. Fish. Comm. f. 1891, pp. 41-55 (1892), gives an annotated list of Fishes.

Ohio : L. M. MCCORMICK, Bull. Oberlin Coll. Labor., No. 2, 1892, 34 pp., 14 pls., gives a descriptive list of the Fishes of Lorain County.

Kentucky : P. H. KIRSCH, Bull. U. S. Fish Comm. f. 1890, pp. 291 & 292, gives a list of the Fishes of Clinton County.

Kentucky and Tennessee : P. H. KIRSCH, *op. cit.* 1891, pp. 259-268 (1893), reports on a collection from the Southern tributaries of the Cumberland River.

Texas : B. H. EVERMANN, *t. c.* pp. 75-88, has notes on Fishes.

California : C. H. EIGENMANN, P. U. S. Nat. Mus. xv, 1892, pp. 123-178, pls. x-xviii, gives an account of his observations on the Fishes of San Diego, with special reference to the spawning habits, embryology and migrations.

Jamaica : T. D. A. COCKERELL has compiled a provisional list of the Fishes, published as Bulletin No. 1, by the Institute of Jamaica, 1892.

Matto-Grosso, Brazil : G. A. BOULENGER, Ann. N. H. (6) x, 1892, pp. 9-12, pls. i & ii, describes some new or little-known Fishes.

Argentina : E. L. HOLMBERG, Rev. Argent. i, 1891, pp. 180-193, describes new or little-known Fishes.

### NEW ZEALAND.

G. M. THOMSON, Tr. N. Z. Inst. xxiv, 1892, pp. 202-215, has notes on the occurrence, habits, weight, &c., of various Marine Fishes in New Zealand.

## IV.—PALÆONTOLOGY.

R. STORMS, Bull. Soc. Belg. Géol. v, 1891, pp. 114-128 & 142-157, reviews recent progress in fossil Ichthyology.

R. H. TRAQUAIR, Ann. Scott. N. H. i, 1892, pp. 31-39, gives a list of the type and figured specimens of fossil Fishes in the "Powrie Collection," now in the Edinburgh Museum.

British Islands: J. W. DAVIS, Sci. Tr. R. Dublin Soc. (2) iv, 1892, pp. 703-748, pls. lxx-lxxiii, describes and figures the *Pleuracanthidæ* from the Coal Measures.

England: A. S. WOODWARD, P. Geol. Ass. xii, 1892, pp. 238-241, pl. iv, makes supplementary observations on some fossil Fishes of the Lower Oolites. E. J. L. GARDINER, P. Bristol Soc. (2) vii, 1892, pp. 34 & 35, has a note on Fish-remains from the Old Red Sandstone of Portishead.

France: H. E. SAUVAGE, C.R. cxvi, 1893, p. 656, remarks on the fossil Fish of the Permian.

Dep. Yonne: H. E. SAUVAGE, Bull. Soc. Autun, iv, 1891, pp. 59-81, pls. vi-ix, and *op. cit.* v, 1892, pp. 386-399, pls. xvi & xvii, publishes researches on the Fish of the Upper Lias.

Belgium: A. DAIMERIES, Bull. Soc. Mal. Belg. (4) vi, 1891, pp. lxxiii-lxxvii, describes fossil Fish-remains.

Isle of Oesel, Baltic: J. V. ROHON monographs the *Thyestidæ* and *Tremataspidæ* of the Upper Silurian; Mém. Ac. Pétersb. (7) xxxviii, 1892, No. 13, 88 pp., 2 pls. F. SCHMIDT, JB. Mineral. 1893, pp. 99-101, reports on the discovery of New Silurian Fish-remains on the Isle of Oesel.

Italy: F. BASSANI, Atti Ist. Venet. (7) iii, 1892, pp. 1031-1045, has a note on Tertiary Fish-remains from Salcedo and Novale.

Sardinia: A. S. WOODWARD, Rep. Brit. Ass. 1891, p. 634 (1892), makes short remarks on the Lower Tertiary Fish fauna.

Canada: A. S. WOODWARD, Geol. Mag. (3) ix, 1892, pp. 1-6, pl. i, and pp. 481-485, pl. xiii, and R. H. TRAQUAIR, *op. cit.* x, 1893, pp. 145-149, figs., have notes on some Devonian Fish-remains. J. F. WHITEAVES, Contr. Can. Pal. i, pt. iv, pp. 353-356, has notes on the Fishes of the Devonian of Lakes Manitoba and Winnipeg. E. D. COPE describes some Fish-remains from the Oligocene or Lower Miocene beds of the Cypress Hills; *op. cit.* iii, 1891, pp. 1-4.

Pennsylvania: E. D. COPE, P. Am. Phil. Soc. xxx, 1892, pp. 221-229, pls. vii & viii, describes various new and little-known palæozoic Fish-remains, mostly from the Chemung beds.

Kansas: A. R. CROOK, Palæontogr. xxxix, 1892, pp. 107-124, pls. xv-xviii, describes some Teleosteans from the Chalk.

South Dakota: E. D. COPE, P. Am. Ass. 1891 (1892), p. 285, remarks on the discovery of Oligocene (?) Fish-remains in the Ree Hills.

## V.—REFERENCES, ARRANGED SYSTEMATICALLY.

## TELEOSTOMI.

## TELEOSTEI.

- C. L. HERRICK, *Am. Nat.* xxvi, 1892, pp. 112-120, pls. vii & viii, has notes on the anatomy and histology of the prosencephalon of Teleosteans. The same author, *Anat. Anz.* vii, 1892, pp. 422-431, figs., has additional notes on the Teleost brain.
- S. RAMON Y CAJAL, *An. Soc. Esp.* (2) i, 1892, pp. 281-305, figs., remarks on the retina of Teleosteans.
- F. E. SCHULZE, *SB. Ak. Berlin*, 1892, pp. 87 & 88, fig., has a note on nerve-terminations in the epidermis of Teleosteans.
- R. FUSARI, *Arch. Ital. Biol.* xviii, 1892, pp. 204-239, gives a French abstract of his researches on the early stages of development in Teleosteans.
- P. STÖHR, *Anat. Anz.* viii, 1893, pp. 205-208, writes on the development of the liver and pancreas in the Trout.
- W. L. CALDERWOOD, *J. Mar. Biol. Ass.* (2) ii, 1892, pp. 298-312, pls. xi & xii, contributes to our knowledge of the ovary and intra-ovarian egg in Teleosteans.
- E. R. BOYER, *Bull. Mus. C. Z.* xxiii, 1892, pp. 91-133, 8 pls., writes on the mesoderm in Teleosteans, and its share in the formation of the pectoral fin.
- J. T. CUNNINGHAM, *J. Mar. Biol. Ass.* (2) ii, 1892, pp. 222-264 & 344-362, writes on the rate of growth of some sea Fishes (Gadoids, Pleuronectoids, and Clupeoids), and the age and size at which they begin to breed; also, *t. c.* pp. 325-332, on a few larval forms of Sole and Mackarel.
- W. E. COLLINGE, *Ann. N. H.* (6) x, 1892, pp. 228-230, reports on the results of his method of preserving Teleostean ova.

## ACANTHOPTERYGII.

## PERCIDÆ.

- Lucioperca*, Cuv.: BOULENGER, *P. Z. S.* 1892, p. 411, gives a synopsis of the species, and describes and figures, pl. xxv, a specimen of *L. marina*, C. & V.
- Etheostoma cinereum*, Storer, redescribed by KIRSCH, *Bull. U. S. Fish Comm.* f. 1891, p. 264 (1893). *E. guentheri*, p. 962, Winnipeg and Iowa, and *quappella*, p. 963, Qu'Appelle, W. Canada, n. spp., EIGENMANN, *Am. Nat.* xxvi, 1892, p. 963. *E. scovellii*, n. sp., WOOLMAN, *t. c.* p. 260, Chihuahua, N. Mexico. *E. wrightii*, n. sp., McCORMICK, *Bull. Oberlin Coll. Labor.*, No. 2, 1892, p. 30, Lorain County, Ohio. *E. obeyense*, n. sp., KIRSCH, *Bull. U. S. Fish Comm.* f. 1890, p. 292, fig. (1892), Kentucky.

- Siniperca scherzeri*, n. sp., STEINDACHNER, Anz. Ak. Wien, 1892, p. 130, and Denk. Ak. Wien, lix, 1892, p. 357, pl. i, fig. 1, Shanghai.
- Percalabrax japonicus*, C. & V.: on a large specimen; STEINDACHNER, Denk. Ak. Wien, lix, 1892, p. 359.
- Serranus dermopterus*, Schleg., redescribed and figured; *id. t. c.* p. 359, pl. ii, fig. 1.
- C. H. BOLLMAN, Rep. U. S. Fish. Comm. f. 1888, pp. 557-579, pls. lxxviii-lxxii (1891), reviews the N. American *Centrarchidae*.

## SQUAMIPINNES.

- Toxotes microlepis*, Gthr., is distinct from *T. microlepis*, Blyth, which is renamed *T. blythii*; BOULENGER, Ann. N. H. (6) ix, 1892, p. 143.

## SPARIDÆ.

- Box lineatus*, n. sp., BOULENGER, P. Z. S. 1892, p. 134, Muscat, Arabia.
- Cantharus griseus*, C. & V.: on artificial fecundation; KUNSTLER, Act. Soc. L. Bord. (5) v, 1893, p. 241.

## SCORPÆNIDÆ.

- Sebastes riviparus*, Kroy.: on its occurrence off the East Coast of Scotland; G. SIM, Ann. Scott. N. H. ii, 1893, p. 47. [The fish described as *S. norvegicus* by Sim is *Scorpena dactylopterus*.—REC.]
- Scorpena frondosa*, n. sp., GÜNTHER, P. Z. S. 1891, p. 482, pl. xxxix, Mauritius.
- Minous inermis*, Alcock: description of an Anthomedusoid commensal on this fish; ALCOCK, Ann. N. H. (6) x, 1892, p. 207.

## NANDIDÆ.

- Acharnes niederleini*, p. 181, Misiones, Argentina, and *chacoensis*, p. 182, Chaco, Argentina, n. spp., HOLMBERG, Rev. Argent, i, 1891.

## BERYCIDÆ.

- Oreosoma*, Cuv., is referred to the *Berycidae*; VAILLANT, C.R. cxvi, 1893, p. 598.

## SCIÆNIDÆ.

- Sciæna albiflora*, Richards., (= *Pagrus macrophthalmus*, Basil.), p. 361, *amoyensis*, Blkr., p. 362, and *amblyceps*, Blkr., p. 363, redescribed by STEINDACHNER, Denk. Ak. Wien, lix, 1892.

## CARANGIDÆ.

- Lichia vadigo*, Risso: on specimens from the Cornish Coast; GÜNTHER, Ann. N. H. (6) x, 1892, p. 335.

## 22 *Pisces.*

### V. PISCES.

#### STROMATEIDÆ.

*Centrolophus pompilus*, Art. : on some young specimens from the Coast of Cornwall ; HOLT, J. Mar. Biol. Ass. (2) ii, 1892, p. 265.

#### SCOMBRIDÆ.

*Thynnus macropterus*, Schleg., = *T. albacora*, Lowe ; BOULENGER, P. Z. S. 1892, p. 135.

*Cybium (Enchodus) bleekeri*, Winkler (foss.), described and figured by STORMS, Mém. Soc. Belg. Géol. vi, 1892, p. 3, pl. i.

#### COTTIDÆ.

*Triglops murrayi*, Gthr., recorded from the E. Coast of Scotland by G. SIM, Ann. Scott. N. H. i, 1892, p. 76.

*Cottus philonips* and *onychus*, n. spp., EIGENMANN, Am. Nat. xxvi, 1892, p. 963, W. Canada.

✓ *Argyrocottus*, n. g., resembling *Melletes*, Bean, in the very long ventrals, but distinguished by the absence of cleft behind the last gill, of teeth on the palate, and of scales. *A. zanderi*, n. sp., HERZENSTEIN, Mém. biol. xiii, 1892, p. 219, Sachalien I.

#### DISCOBOLI.

S. GARMAN brings out a monograph of these Fishes, which he divides into three families: *Cyclopteridæ*, *Liparopsidæ*, *Liparididæ* ; Mem. Mus. C. Z. xiv, No. 2, 1892, 96 pp., 13 pls.

✓ *Cyclopteroides*, n. g., closely allied to *Cyclopterus*, for *C. gyrynops*, n. sp. ; GARMAN, t. c. p. 37, pl. xi, figs. 4-9, Alaska.

✓ *Liparops*, n. g., for *Cyclopterus stelleri*, Pall. ; GARMAN, t. c. p. 42.

*Liparis*, Act. : the following species are figured by GARMAN, t. c. :—*L. agassizii*, Putn., pls. i-iii, *pulchellus*, Ayres, pl. iv, *mucosus*, Ayres, pl. v, *calliodon*, Pall., pl. vi, figs. 1-5, *antarctica*, Putn., pl. vi, figs. 6-10, *liparis*, L., pl. vii, figs. 1-5, and *montagui*, Don., pl. vii, figs. 6-20.

Remarks on the distribution of the *Cyclopteri* ; GARMAN, Science, xix, 1892, p. 187.

#### GOBIIDÆ.

*Gobius minutus*, Gm. : extensive notes on variations of fin-rays, scaling and colour, sexual differences, and habits of this Fish, which is figured ; GUITEL, Arch. Z. expér. (2) x, 1892, p. 499, pl. xxii : on the ovary and eggs ; GUITEL, C.R. cxiv, 1892, p. 612. *G. beccarii*, n. sp., PERUGIA, Ann. Mus. Genov. (2) xii, 1892, p. 1010, Sarawak.

*Crystallogobius nilssonii*, Gill : on its abundance at Plymouth ; J. T. CUNNINGHAM, Rep. Brit. Ass. 1891, p. 687 (1892).

## BLENNIIDÆ.

*Blennius zvonimiri*, n. sp., Kolombatovic, Glasnik Naravosl. Brustza, vii, 1892, p. 107, pl. v, Coast of Dalmatia.

*Clinus argenteus*, C. & V. : on nesting and oviposition ; F. GUITEL, C.R. cxv, 1892, p. 295.

*Anarrhichas minor*, Olafs., figured, with notes on its occurrence on the Scottish Coast ; M. YOUNG & W. EAGLE CLARKE, Ann. Scott. N. H. i, 1892, p. 26, pl. i.

✓ *Blenniophidium*, n. g., allied to *Cebedichthys* ; BOULENGER, P. Z. S. 1892, p. 583 (1893). *B. petropauli*, n. sp., *id. t. c.* p. 584, fig., Kamtschatka.

## MASTACEMBELIDÆ.

*Mastacembelus marmoratus*, n. sp., PERUGIA, Ann. Mus. Genov. (2) x, 1892, p. 968, Congo.

## MUGILIDÆ.

*Mugil alatus*, n. sp., STEINDACHNER, Anz. Ak. Wien, 1892, p. 133, and Denk. Ak. Wien, lix, 1892, p. 364, Madagascar.

*Myxus capurrii*, n. sp., PERUGIA, Ann. Mus. Genov. (2) xii, 1892, p. 1007, Senegal.

## GASTROSTEIDÆ.

*Gastrosteus aculeatus*, L. : Remarks on the variations of the lateral shields in specimens from Ostend Harbour ; BOULENGER, Ann. N. H. (6) xi, 1893, p. 228.

## TRACHYPTERIDÆ.

*Regalecus grillii*, Lindr., redescribed by H. O. FORBES, Tr. N. Z. Inst. xxiv, 1892, p. 192.

## LOPHOTIDÆ.

*Lophotes capedianus*, C. & V., recorded from the Cape of Good Hope by TRIMEN, P. Z. S. 1891, p. 483.

## INCEPTÆ SEDIS.

✓ *Pseudoscopelus*, n. g. (*Trachinidarum* ?). Body naked ; spinous dorsal short, soft dorsal and anal long ; a ventral lateral line ; mouth deeply cleft. *P. scriptus*, n. sp., LÜTKEN, Vid. Selsk. Skr. (6) vii, 1892, p. 285, pl. i, figs. 3-5, Bahamas.

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*ACANTHOPTERYGII PHARYNGOGNATHI.*

## CHROMIDÆ.

*Chromis fuscatus*, n. sp., PERUGIA, Ann. Mus. Genov. (2) x, 1892, p. 970, Congo.

*Acara bartoni*, n. sp., BEAN, P. U. S. Nat. Mus. xv, 1892, p. 286, pl. xlv, fig. 3, San Luis Potosi, Mexico.

*Heros centralis*, n. sp., HOLMBERG, Rev. Argent. i, 1891, p. 183, Santiago del Estero, Argentina.

*Crenicichla saxatilis*, L., n. var., *semicineta*, STEINDACHNER, Denk. Ak. Wien, lix, 1892, p. 376, Bolivia.

*ANACANTHINI.*

## GADIDÆ.

J. T. CUNNINGHAM, Rep. Brit. Ass. 1891, p. 685, remarks on the growth of various British Gadoids, and their Distribution at different ages  
Also J. Mar. Biol. Ass. (2) ii, 1892, p. 222-264.

## OPHIDIIDÆ.

*Amnodytes lanceolatus* and *A. tobianus*: on the eggs and young stages; McINTOSH, Ann. N. H. (6) x, 1892, p. 97.

*Lamprogrammus fragilis*, n. sp. (P), ALCOCK, t. c. p. 348, Bay of Bengal, 678 faths.

- ✓ *Hephthocara*, n. g.: head large, with thin, smooth, uncrested bones, scaleless; no armature, but a weak opercular spine; body compressed, tapering, covered with deciduous cycloid scales; eye moderate; snout not overhanging the jaws; mouth with obliquely ascending cleft, and with the lower jaw prominent; villiform teeth in the jaws, palatines, and vomer; no barbel or hyoid filaments; gill-openings wide; gill-membranes separate; four gills; no pseudo-branchiæ; eight branchiostegals; lateral line indistinguishable; vertical fins confluent; pectoral fins entire; no ventral fins. *H. sinum*, n. sp., ALCOCK, t. c. p. 349, pl. xviii, fig. 1, Gulf of Manaar, 902 faths.

## MACRURIDÆ.

*Macrurus macrolophus*, Alcock, figured by ALCOCK, Ann. N. H. (6) x, 1892, p. 351. *M. hextii*, Alc., and *wood-masoni*, Alc.: further notes; id. t. c. pp. 351 & 353. *M. calorhynchus*, Risso: description of an anomalous specimen; HERZENSTEIN, Mém. biol. xiii, 1892, p. 223.

## PLEURONECTIDÆ.

W. C. McINTOSH, Ann. N. H. (6) x, 1892, p. 102, remarks on the ova and larvæ of certain British Pleuronectoids.

- E. W. L. HOLT, J. Mar. Biol. Ass. (2) ii, 1892, pp. 363-379, writes on the relation of size to sexual maturity in Pleuronectoids.
- J. T. CUNNINGHAM, Nat. Sci. i, 1892, pp. 191-199 & 635-638, and A. GIARD, *t. c.* pp. 356-359, discuss the evolution of Flat-Fishes.
- G. POUCHET, CR. Soc. Biol. (9) iv, 1892, pp. 200-202, remarks on Turbots with partially pigmented blind side.
- Pleuronectes*, L.: on an apparent hybrid between *P. platessa*, L., and *P. limanda*, L.; DUNCKER, Zool. Anz. xv, 1892, p. 451.
- Zeugopterus norvegicus*, Gthr.: note by J. T. CUNNINGHAM, J. Mar. Biol. Ass. (2) ii, 1892, p. 325.

## PHYSOSTOMI.

## SILURIDÆ.

- B. DEAN, Rep. U. S. Fish Comm. xix, 1892, pp. 308-333, 14 pls., has notes on the anatomy of the Siluroids, with special reference to the pineal fontanelle; a list is given of the characters in which the Fish of this family differ from the other Teleosteans.
- H. B. POLLARD, Morph. JB., Anat. v, 1892, pp. 525-551, pls. xxxv & xxxvi, describes the lateral line system in a few Siluroids of the genera *Clarias*, *Callichthys*, *Auchenaspis*, *Trichomycterus*, and *Chatostomus*.
- T. W. BRIDGE & A. C. HADDON, P. R. Soc. lii, 1892, pp. 139-157, publish an abstract of their paper on the air-bladder and Weberian ossicles in the Siluroids.
- C. H. EIGENMANN, Am. Nat. xxvi, 1892, p. 71, corrects a previous statement that the operculum is absent in *Aspredo*.
- Diastatomycter*, Vaill., = *Hemisilurus*, Blkr.; VAILLANT, Bull. Soc. Philom. (8) v, 1893, p. 15.
- Macrones pluriradiatus*, n. sp., VAILLANT, *op. cit.* iv, 1892, p. 126, Upper Tonkin. *M. pratti*, n. sp., GÜNTHER, in Pratt's "Snows of Tibet," p. 245, pl. i, fig. B, Province of Sze-Chuen, China.
- Pseudobagrus eupogon*, n. sp., BOULENGER, Ann. N. H. (6) ix, 1892, p. 247, Shanghai.
- ✓ *Neobagrus*, n. g., distinguished from *Pseudobagrus* by the small number (13) of anal rays, the rounded caudal, the absence of teeth on the palate, and the attachment of the gill-membranes to the isthmus. BELLOTTI, Atti Soc. Ital. xxxiv, 1892, p. 100. *N. fuscus*, n. sp., *id. t. c.* p. 101, fig., Yokohama, Japan.
- Rhineaster rhæas*, n. sp. (foss.), COPE, Contr. Canad. Pal. iii, 1891, p. 3, pl. i, fig. 3, Lower Miocene, Canada.
- Amiurus catus*, L., note and figure; B. DEAN, Rep. U. S. Fish Comm. xix, 1892, p. 302, pl. —. *A. cancellatus* and *macconnellii*, n. spp. (foss.), COPE, Contr. Canad. Pal. iii, 1891, pp. 3 & 4, pl. i, figs. 4-7, Lower Miocene, Canada.
- Amblyceps marginatus*, n. sp., GÜNTHER, in Pratt's "Snows of Tibet," p. 245, pl. ii, fig. A, Province of Sze-Chuen, China.

- Achilognathus guichenoti*, Blkr., redescribed by STEINDACHNER, Denk. Ak. Wien, lix, 1892, p. 367. *A. coreanus*, n. sp., STEINDACHNER, Anz. Ak. Wien, 1892, p. 133, and t. c. p. 366, Corea.
- Opsariichthys bidens*, Gthr., redescribed by STEINDACHNER, t. c. p. 368.
- Chanodichthys affinis*, n. sp., VAILLANT, Bull. Soc. Philom. (8) iv, 1892, p. 127, Upper Tonkin.
- Leucaspis delineatus*, Sieb. : on malformed specimens; KNAUTHE, Zool. Anz. xvi, 1893, p. 109.
- Homaloptera fimbriata*, Gthr., figured by GÜNTHER, in Pratt's "Snows of Tibet," pl. iii, fig. A. *H. abbreviata*, n. sp., id. t. c. p. 248, pl. iii, fig. B, Province of Sze-Chuen, China.
- Nemachilus sturanyi*, n. sp., STEINDACHNER, Anz. Ak. Wien, 1892, p. 131, and Denk. Ak. Wien, lix, 1892, p. 378, pl. ii, fig. 3, Macedonia.
- Botia pratti* and *superciliaris*, n. spp., GÜNTHER, in Pratt's "Snows of Tibet," p. 250, pl. iv, Province of Sze-Chuen, China.
- ✓ *Eucirrichthys*, n. g., allied to *Acanthopphthalmus* and *Apua*. Body cylindrical, elongate, slender; mouth with pendant lip; eight barbels at the end of the snout, six of which are maxillary; a minute spine below the eye; dorsal far back, with the last ray just above the first anal ray. *E. doriae*, n. sp., PERUGIA, Ann. Mus. Genov. (2) xii, 1892, p. 1009, Sarawak.

## CHARACINIDÆ.

- Curimatus nilens*, p. 184, and *conspersus*, p. 185, n. spp., HOLMBERG, Rev. Argent. i, 1891, Rio Paraguay.
- Prochilodus platensis*, n. sp., HOLMBERG, t. c. p. 186, Rio de la Plata, Buenos Ayres.
- Leporinus solaris*, Holmb., redescribed by HOLMBERG, t. c. p. 187.
- Alestes brevipinnis*, n. sp., PERUGIA, Ann. Mus. Genov. (2) x, 1892, p. 975, Congo.
- Nannæthiops unitaniatus*, Gthr., has ctenoid scales; VAILLANT, Bull. Soc. Philom. (8) v, 1893, p. 13, fig.
- Brycon* (*Chalcinopsis*) *alburnus*, Gthr., and *dentex*, Gthr., redescribed by STEINDACHNER, Denk. Ak. Wien, lix, 1892, pp. 374 & 375.
- Tetragonopterus* (*Hemibrycon*) *polyodon*, Gthr., redescribed, id. t. c. p. 375.
- T. lineatus*, Stdr., = *T. lineatus*, Perugia; *T. anomalus*, Stdr., = *T. nigripinnis*, Perugia, id. t. c. p. 376.
- T. correntinus*, p. 188, Rio Parana, Corrientes, and *erythropterus*, p. 189, Rio de la Plata, n. spp., HOLMBERG, Rev. Argent. i, 1891.
- T. moorii*, n. sp., BOULENGER, Ann. N. H. (6) x, 1892, p. 11, pl. ii, fig. 1, Matto Grosso, Brazil.
- ✓ *Brachychalcinus*, n. g., intermediate between *Tetragonopterus*, Cuv., and *Lutkenia*, Stdr., but with a movable spine, directed forward, in front of the dorsal fin; BOULENGER, t. c. p. 11. *B. retrospina*, n. sp., id. t. c. p. 12, pl. ii, fig. 2, Matto Grosso, Brazil.
- Piabuca melanostoma*, n. sp., HOLMBERG, t. c. p. 192, Argentina.

- Myletes mesopotamicus*, Holmb., redescribed ; HOLMBERG, Rev. Argent. i, 1891, p. 193.
- Bergia altipinnis*, Sldr., = *Pseudocorynopoma doriae*, Perugia ; BOULENGER, Ann. N. H. (6) x, 1892, p. 12 ; STEINDACHNER, Denk. Ak. Wien, lix, 1892, p. 376.
- ✓ *Chalcinopelecus*, n. g. [= *Pseudocorynopoma*, Perugia.—REC.], for *C. argentinus*, n. sp., HOLMBERG, t. c. p. 190, Argentina.

## CYPRINODONTIDÆ.

- Characodon variatus*, Bean : note by BEAN, P. U. S. Nat. Mus. xv, 1892, p. 286.
- Haplochilus dayi*, n. sp., STEINDACHNER, Anz. Ak. Wien, 1892, p. 131, and Denk. Ak. Wien, lix, 1892, p. 376, pl. i, fig. 2, Ceylon.
- Fundulus pallidus*, n. sp., EVERMANN, Bull. U. S. Fish Comm. f. 1891, p. 84, pl. xxxv (1892), Texas. *F. robustus*, n. sp., BEAN, P. U. S. Nat. Mus. xv, 1892, p. 285, pl. xlv, fig. 2, Mexico.
- Zygonectes funduloides*, p. 85, pl. xxxv, fig. 3, *pulversus*, p. 85, pl. xxxvi, fig. 1, and *jenkinsi*, p. 86, pl. xxxvi, fig. 2, n. spp., EVERMANN, t. c., Texas.

## GALAXIIDÆ.

- Galaxias nigothoruk*, n. sp., LUCAS, P. R. Soc. Vict. (2) iv, 1892, p. 28, Lake Nigothoruk, Gippaland, Victoria.

## STERNOPTYCHIDÆ.

- Diplophos tania*, Gthr., redescribed and figured by LÜTKEN, Vid. Selsk. Skr. (6) vii, 1892, p. 278, pl. ii, figs. 1-3.
- Gonostoma microdon*, Gthr. (?) : note on, and figure of a specimen referred to this species ; LÜTKEN, t. c. p. 280, pl. iii, figs. 4 & 5. *G. elongatum*, Gthr. : note by ALCOCK, Ann. N. H. (6) x, 1892, p. 354.
- Chauliodus pammelas*, n. sp., ALCOCK, t. c. p. 355, Laccadive Sea, 1370 fatha.

## STOMIATIDÆ.

- Astronesthes*, Rich. : remarks on the three species of this genus ; LÜTKEN, Vid. Selsk. Skr. (6) vii, 1892, p. 273.
- Photostomias guernei*, Coll. : note by LÜTKEN, t. c. p. 280, fig.

## SALMONIDÆ.

- H. BLANC, Bull. Soc. Vaud. (3) xxvii, 1892, pp. 272-275, has a preliminary note on the maturation and fecundation of Trout ova.
- O. STRACHLY, MT. Embr. Inst. Wien (2) v, 1892, pp. 20-22, has a note on abnormal development of the Trout ovum.

- Salmo fario*, L.: R. TRAQUAIR, Ann. Scott. N. H. i, 1892, p. 92, pls. iii-v, describes and figures malformed specimens from Scottish waters.  
*S. ohridanus*, n. sp., STEINDACHNER, Anz. Ak. Wien, 1892, p. 132, and Denk. Ak. Wien, lix, 1892, p. 23, pl. iii, figs. 1-3, Macedonia.  
*Coregonus coulterii*, n. sp., EIGENMANN, Am. Nat. xxvi, 1892, p. 961, Rocky Mountains.

## PERCOPSIDÆ.

- Remarks by EIGENMANN, Science, xx, 1892, p. 233.  
 ✓ *Columbia*, n. gen., allied to *Percopsis*, Ag., but dorsal and anal each with two very strong spines, scales most strongly ctenoid on anterior part of body, and posterior margin of preopercle with a few short but strong spines. *C. transmontana*, n. sp., *id. t. c.* p. 234, Umatilla, Columbia River.

## CLUPEIDÆ.

- Clupea pilchardus*, L.: on its growth; J. T. CUNNINGHAM, Nature, xlv, 1892, pp. 255-558; M. DUNN, *t. c.* p. 511: on its growth in the Mediterranean; MARION, CR. Ass. Fr. Sci. 1891, p. 228: on its reproduction; J. T. CUNNINGHAM, Rep. Brit. Ass. 1891, p. 686 (1892).  
 ✓ *Hyperlophus*, n. g., distinguished by the dorsal serrature, for *Clupea spratelloides*, n. sp., DOUGLAS-OGILBY, Rec. Austral. Mus. ii, 1892, p. 24, Coast of New South Wales. A. S. WOODWARD, Ann. N. H. (6) x, 1892, p. 412, points out that this doubly-armed herring falls in the genus *Diplomystus*, Cope, established for Cretaceous and early Tertiary species.  
*Pellonula vorax*, Gthr.: note by PERUGIA, Ann. Mus. Genov. (2) x, 1892, p. 977.

## HALOSAURIDÆ.

- Halosaurus parvipennis*, n. sp., ALCOCK, Ann. N. H. (6) x, 1892, p. 362, Laccadive Sea, 865-880 faths.

## SAURODONTIDÆ.

- Ichthyodectes anaides*, Cope (foss.): notes by CROOK, Palæontogr. xxxix, 1892, p. 111, pl. xv. *I. polymicrodus*, n. sp. (foss.), *id. t. c.* p. 112, pl. xvi, Chalk of Kansas.  
*Portheus molossus*, Cope: notes by CROOK, *t. c.* p. 114, pl. xviii.

## MURÆNIDÆ.

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- T. BOVERI, *Morph. JB.*, *Anat.* v, 1892, pp. 429-510, figs., pls. xxxi-xxxiv, deals with the excretory tubules of the urogenital system.
- T. BOVERI, *Anat. Anz.* vii, 1892, pp. 170-181, figs., writes on the genital glands.
- E. B. WILSON, *t. c.* pp. 732-740, figs., writes on multiple and partial development.
- B. DANILEWSKY, *Arch. ges. Phys.* li, 1892, pp. 393-400, writes on the physiology of the central nervous system.
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## VI. TUNICATA.

BY

PROFESSOR W. A. HERDMAN, D.Sc., F.R.S.

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3. GARSTANG, W. Attempt to elucidate the real structure and relations of Moss's Polystigmatic Appendicularian. *Tr. Biol. Soc. Liverp.* vi, pp. 57–69, pl. v.
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14. KOWALEVSKY, A. Einige Beiträge zur Bildung des Mantels des Ascidiens. Mém. Ac. Pétersb. vii, xxviii, No. 10, pp. 1-20, pla. i & ii.
15. LAHILLE, F. Classification des Tuniciers (groupes primordiaux). Naturaliste, 1 Mars, 1892, 12 pp.
16. LOHMANN, H. Vorbericht über die Appendikularien der Plankton-Expedition, in Reisebeschreibung der Plankton-Expedition von Dr. Otto Krümmel. Kiel u. Leipzig, 1892, pp. 139-149.
17. METCALF, MAYNARD M. The Anatomy and Development of the Eyes and Subneural Gland in *Salpa*. Johns Hopk. Univ. Circ. xi, No. 97, pp. 78 & 79 (April, 1892).
18. NOTT, J. T. On the Composite Ascidiens of the North Shore Reef. Tr. N. Z. Inst. xxiv, pp. 305-334, pla. xxiv-xxx.
19. OKA, A. Die periodische Regeneration der Oberen Körperhälfte bei den Diplosomiden. Biol. Centralbl. 12 bd, Nos. 9 & 10, pp. 265-268.
20. ——. Ueber die Knospung der Botrylliden. Z. wiss. Zool. bd. 54, pp. 521-547, pls. xx-xxii.
21. OKA, A., and WILLEY, A. On a new genus of Synascidiens from Japan. Q. J. Micr. Sci. xxxiii, pp. 313-323, pla. xvii & xviii.
22. PIZON, A. Développement de l'organe vibratile chez les Ascidies composées. C.R. cxiv, No. 5, pp. 237-239.
23. ——. Histoire de la blastogenèse chez les Botryllidés. Ann. Sci. Nat. Zool. xiv, Nos. 1, 2, 3.
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29. WATT, JAMES. On the structure of *Boltenia pachydermatina*. Tr. N. Z. Inst. xxiv, pp. 334-348, pla. xxxi-xxxiv.

30. WILLEY, A. Observations on the Post-embryonic development of *Ciona intestinalis* and *Clavelina lepadiformis*. P. R. Soc. li, pp. 513-520.

——. [See also OKA & WILLEY.]

31. ———. On the development of the hypophysis in the Ascidians. Zool. Anz. xv, No. 400, pp. 332-334.

## II.—ANATOMY, EMBRYOLOGY, AND PHYSIOLOGY.

### (a.) ANATOMY.

NOTT (18) has given a description, with some anatomical and histological detail, of eight new species of Compound Ascidians from New Zealand belonging to the genera *Leptoclinum*, *Polysyncraton*, and *Cystodytes*. The most important form is *Polysyncraton*, which presents characters intermediate between those of *Leptoclinum*, M.-Edw., *Celocormus*, Herdm., and the Diplosomidæ. Nott proposes finally to follow Jourdain in uniting the families Didemnidæ and Diplosomidæ under the term Oligosomidæ, in which he would put *Polysyncraton*. He gives a new diagnosis of this family Oligosomidæ.

WATT (29) gives an account of the anatomy, and some points in the histology, of *Boltenia pachydermatina*, Herdm., the large common *Boltenia* of New Zealand. He points out that this species agrees with *Culeolus* in having the heart on the right side of the body, and six folds on each side of the branchial sac.

OKA (20) gives an account of the structure of a species of *Botryllus* from Misaki, Japan.

BUTSCHLI (2) gives an account of the eyes of *Salpa*, with the view of showing that while in some species the whole eye is simple and non-inverted, in those with horse-shoe eyes the lateral parts become modified so as to be inverted, and this leads to forms with three eyes, which may be compared with the vertebrate pineal eye and pair of lateral eyes.

METCALF (17) gives a preliminary account of his investigations into the structure and development of the eyes, subneural gland and neighbouring parts in *Salpa*. He finds that in the chain form of *S. pinnata*, in addition to the median dorsal eye, there are two pairs of much smaller eyes on the nerve-ganglion. He finds that the dorsal tubercle is innervated by a plexus of nerve cells and fibres. In the development, the cavity of the central nervous system is continuous with the lumen of the ciliated funnel of the dorsal tubercle. He appears to agree with those previous writers who regard the early function of these structures to have been probably the aeration of the brain, and the carrying off of the waste products, while the opening into the pharynx was probably a sense organ.

GÖPPERT (5) has examined the structure of the eyes in five species of *Salpa*. The eye arises as a stalked body, projecting anteriorly and ventrally from the middle of the ganglion. Some of its cells become the



retina and a pigment layer; there are also in most species special groups of sensory elements without pigment. The retina may also be differentiated into two layers; and the end of the optic cell which is directed towards the light in some cases represents the nerve ending, and in other cases is the opposite end of the cell. He points out that while the solitary *Salpæ* are mostly able to look only dorsally, the chain forms are able to look out ventrally in addition. He considers that there is no direct relation between these eyes of *Salpæ* and the vertebrate eyes, except that both are developed from parts of the central nervous system.

HERDMAN (6) describes the minute structure of a species of *Oikopleura* from Liverpool Bay, as made out from serial sections. These show, amongst other things, the condition of the endostyle as a diverticulum to a great extent shut off from the branchial sac, the presence of a genital duct, the distribution of the enlarged ectoderm cells and the cuticular test, the exact course of the nerve cord through the posterior part of the body, and, finally, the shapes and relative positions of the alimentary and reproductive viscera.

GAESTANG (3), from an examination of the descriptions and figures of Moss and Fol, comes to the conclusion that Moss's remarkable polystigmatic Appendicularian (*Mossia dolioloides*) has no special resemblance to *Doliolum* but is identical with Fol's *Kowalevskia*. He gives a new diagnosis of the genus *Kowalevskia*, and describes the two species *K. tenuis* and *K. mossi*.

HERDMAN (8) points out that atrial tentacles have been known in both Simple and Compound Ascidiæ since 1882, and are now known to occur in four genera, all of these being cases where colonies or aggregations of individuals are formed.

JULIN (13) gives the first part of a detailed memoir on the Ascidiæ of Boulonnais. He commences with *Styelopsis grossularia* as a type, and goes over a considerable part of its structure.

OKA & WILLEY (21) give a detailed account of the structure of a new Compound Ascidian allied to the genus *Didemnoidea*, from Japan. It forms large red lobed colonies, has large tailed larvae, and a thin layer of calcareous spicules in the test.

#### (b.) EMBRYOLOGY.

OKA (20) gives an elaborate account of the development of the buds, and the formation of the colony, in a *Botryllus* from Japan.

SEELIGER (27) corrects some points in Salenky's account of the development of *Pyrosoma*—especially in regard to his criticisms of Seeliger's former papers.

HJORT (11) gives an account of the cycle of development in the Compound Ascidiæ. He finds, as Willey does also, that both in the larva, and also in the young bud, the hypophysis and the ganglion have a common origin from the neural tube, and that the neural tube opens into

the stomodæum, as originally described by Kowalevsky. Willey considers that the ganglion of the Ascidians seems to bear a similar relation to the hypophysis that the infundibulum does to the hypophysis of the higher Vertebrates. But, while in the latter case both organs are rudimentary and arise independently, in the Ascidians both organs are functional and arise together.

PIZON (22) finds in various families of the Compound Ascidians and in Clavelinidæ that the dorsal tubercle develops as a blind diverticulum from the primitive endodermal vesicle and opens secondarily into the "branchial" vesicle, while its posterior part becomes atrophied. It is not, then, a buccal invagination, and so Pizon rejects the homology with the hypophysis of Vertebrates. He considers that the dorsal tubercle is an ancestral organ, once of great importance, but now disappearing, and with no important function in the existing *Tunicata*.

OKA (19) finds a species of *Diplosoma*, from Japan, in which the upper half of the body is periodically renewed, the younger thorax gradually taking the place of the older one.

GÆSTANG (4) has investigated the development of the stigmata in the branchial sac of *Clavelina*, *Botryllus*, *Thylacium*, and *Styela*. He finds that in *Botryllus* the stigmata of the full-grown oozoid are secondary formations due to the subdivision of a series of transversely elongated primary "proto-stigmata." In the buds, however, there are no proto-stigmata, the stigmata appearing quite independently of one another. In *Thylacium* and *Styela* he also finds proto-stigmata, while in *Clavelina*, as in the buds of *Botryllus*, the development is secondarily abbreviated. Gæstang therefore regards *Pyrosoma* in which the adult stigmata are elongated transversely as being a primitive type of Caducichordate *Tunicata*, in which the proto-stigmata have never been subdivided. He also regards *Botryllus* and *Styela* as being more primitive in the Ascidacea than *Clavelina*.

WILLEY (30) reconsiders his former views in regard to homologies in *Amphioxus* and the *Tunicata*, and now submits that the proboscis cavity, endostyle, mouth, and first pair of gill slits in Ascidians correspond to the organs bearing the same names in *Amphioxus*, while the club-shaped gland of *Amphioxus* cannot be homologous with the intestine of Ascidians, as suggested by Van Beneden and Julin.

KOWALEVSKY (14) has made the remarkable discovery that the cells in the Ascidian test are mesoblastic in origin, being derived from the mesenchyme of the larva and making their way through the ectoderm to the exterior during the metamorphosis. The thin test of the free-swimming tailed larva (*Phallusia mammillata*) has no cells. This agrees well with the observations made by various investigators, that in Compound Ascidians the cells of the test act as phagocytes. SALENSKY (25) has also independently discovered that in *Pyrosoma* the test cells are mesodermal in origin. JULIN (13) is of opinion that in *Stylopsis* there are two kinds of cells in the test, the one pigmented red, like the pigmented connective tissue cells throughout the body, and probably of

mesodermic origin, the others colourless, and probably of epiblastic origin from the proliferation of the ectoderm.

(c.) PHYSIOLOGY.

JOURDAIN (12) has been making experiments on the process of deglutition in Ascidians. He finds that in *Perophora* and *Clavelina* deglutition takes place along the dorsal side of the branchial sac, a little to the right hand side of the series of languets. He considers that one of the functions of the vibratile pit (dorsal tubercle) is to furnish mucus for the purpose of agglutinating the food particles. HERDMAN (10) places on record an instance of a large Ascidian (*A. mentula*) acting as a functional hermaphrodite and fertilizing its own ova.

### III.—GEOGRAPHICAL DISTRIBUTION.

NOTT (18) records eight species of Compound Ascidians (all new to science) from the north shore reef, Auckland, New Zealand. Only four species of Ascidians had previously been known from New Zealand.

LOHMANN (16) discusses both the horizontal and the vertical distribution of the Appendicularians in the North Atlantic, as brought out by the "Plankton" Expedition.

BLES (1) finds Appendicularia abundant at Plymouth at beginning of July, chiefly *Oikopleura cophocerca*.

HERDMAN (7), from a consideration of the geographical distribution of the known *Tunicata*, comes to the conclusion that Ascidians attain their greatest development, both in numbers and size, in the colder northern and southern seas.

HERDMAN (9) gives a list of twenty-three species of Simple and Compound Ascidians from the Norwegian seas. Several of them are new to science, but are not yet described in detail.

### IV.—SYSTEMATIC.

#### ASCIDIÆ COMPOSITÆ.

##### DIDEMNIDÆ.

*Sarcodidemnoides*, n. g., OKA & WILLEY, (21) p. 321.

*Sarcodidemnoides misakiense*, n. sp., *id. ibid.*

*Leptoclinum niveum*, n. sp., NOTT, (18) p. 308.

*Leptoclinum densum*, n. sp., *id. t. c.* p. 311.

*Leptoclinum tuberculatum*, n. sp., *id. t. c.* p. 314.

*Leptoclinum maculatum*, n. sp., *id. t. c.* p. 316.

*Polysyncraton*, n. g., NOTT, (18) p. 318 [genus not defined apart from the species.]

*Polysyncraton paradoxum*, n. sp., *id. ibid.*

*Polysyncraton fuscum*, n. sp., *id. t. c.* p. 321.

DISTOMIDÆ.

*Cystodytes aucklandicus*, n. sp., NOTT, (18) p. 323.

*Cystodytes perspicuus*, n. sp. ?, *id. t. c.* p. 326.

DIPLOSOMIDÆ.

*Diplosoma mitsukurii*, n. sp., OKA, (19) p. 266.

LARVACEA.

*Folia*, n. g., LOHMANN, (16) p. 139.

*Folia æthiopica*, n. sp., *id. ibid.*

*Folia gracilis*, n. sp., *id. t. c.* p. 147.

*Oikopleura labradoriensis*, n. sp., *id. t. c.* p. 141.

*Althoffia*, n. g., *id. t. c.* p. 146.

*Althoffia tumida*, n. sp., *id. t. c.* p. 147.

*Fritillaria glandulifera*, n. sp., *id. ibid.*

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## VII. MOLLUSCA.

BY

B. B. WOODWARD, F.G.S., F.R.M.S., &c.

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IN this Record an attempt has been made to repair the more serious of the omissions that occurred in *Mollusca* in Vols. XXVI and XXVII. Accordingly important works by COSSMANN, DALL, HEUDE, and others have been either noticed for the first time, or portions that had been previously overlooked have been now inserted.

The Palæontological papers have not been so exhaustively treated as they were in Vol. XXVIII. The labour of examining the extensive literature of Geology is of itself very great; and as it does not appear necessary for the purposes of Zoology proper that all the Palæontological details should be given, the Recorder, in the absence of an understanding that the Record should serve the purposes of Palæontologists as well as Zoologists, has not felt justified in extending the length of his Record by introducing details that might be looked on as superfluous. Hence, fossil species described as new are mostly omitted from the Systematic part of the Record, and the titles of the papers do not invariably appear in the general list. Under the heading "Geological," in Section II, there will, however, be found references to all important Palæontological works and communications; and the fact of new species being described in them is always noted. New generic and sectional names, however, are fully recorded in the Systematic part.

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### I.—TITLES.\*

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2. ADAMS, L. E. A contribution to the authenticated records of Derbyshire. T. c. p. 77.

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\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

3. ALDRICH, T. H. A new Land Shell [*Nanina dohertyi*] from Sumatra. *Naut.* vi, p. 90.
4. AMALIZKY, W. Ueber die Anthracosien der Permformation Russlands. *Palæontogr.* xxxix, pp. 125-212, 5 pls. Also separately in Russian: Text 8vo, pls. 4to. Abstract in *Protok. Otdyel. Biol.* 1891-92, No. 3.
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17. —. System der Nudibranchiaten Gasteropoden. *Semper's Reisen in Archipel Philippinen*, Theil II, Bd. ii, Hft. 18, pp. 995-1165 [completing vol.].
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19. BEUSHANSEN, L. *Amnigenia rhenana* ein *Anodonta* ähnlicher zweischaler aus dem rheinischen Mitteldevon. JB. k. preuss. geol. Landesanst. xi, Abhand. pp. 1-10, fig.
20. BIEBBAUER, B. A Check-list of the Palæozoic Fossils of Wisconsin, Minnesota, Iowa, Dakota, and Nebraska. Bull. Minnesota Acad. iii. *Mollusca*, pp. 234-245.
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— [See also FISCHER, P., & BOUVIER, E. L. (131 & 132).]
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## II.—ANATOMY, PHYSIOLOGY, &c.

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## 6. RESPIRATORY SYSTEM.

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Excretion in the *Pulmonata*; CUÉNOT (100).—The alleged anal eye of larval Opisthobranchs is, in fact, the permanent kidney; MAZZARELLI (248).—On the nephridia of Prosobranchs; ERLANGER (120).—On the urinary function of the organ of Keber in *Acephala*; LETELLIER (219).—FISCHER, H. (125) treats very fully of the morphology of the liver of *Gastropoda*, and briefly compares it with that of *Brachiopoda*, *Bryozoa*, and *Rotifera*. He distinguishes three stages in its evolution, and summarizes its principal variations. He does not consider it of practical value in classification.—Development of the liver in *Paludina*; FISCHER, H. (127).—A detailed description of the byssus glands of *Barbatia helblingia* is given by SLUITER (362).—Formation of the byssus in some *Pelecypoda*; JOBERT (199).—On the phylogeny of the byssus-apparatus of the *Pelecypoda*; THIELE (404).

## 8. NERVOUS SYSTEM.

Sensory nervous system of *Mollusca* [*Limax* and *Arion*]; RETZIUS (315).—Innervation of the Cerata of some *Nudibranchiata*; HERDMAN & CLUBB (184).—*Heteropoda* are streptoneurous; PELSENEER (279).—Nervous system of *Nerita polita*; BOUTAN (38).—Analyses of the nervous tissue of some *Mollusca*; GRIFFITHS (161).

## 9. SENSORY ORGANS.

Vision in the *Pulmonata*, *Opisthobranchiata*, and *Prosobranchiata*; WILLEM (433).—The alleged anal eye of larval Opisthobranchs MAZZARELLI (248) finds is, in point of fact, the permanent kidney.—On the eye of *Scutum*; PELSENEER (280).

Position and character of the Osphradia in *Acmea*; DALL (101) 1889.

## 10. GENERATIVE ORGANS.

Genitalia of *Nanina*, 2 species, *Chloritis leei*, *Hadra broadbenti*, and *Geotrochus*, 6 species, from British New Guinea; HEDLEY (174).—Anatomy of the genital apparatus of *Helix*; SCHUBERTH (338).—Morphology and systematic value of the genital apparatus in *Helix*; JHERING (195).—On the mode of nuclear division in the development of the Spermatozoa of *Helix pomatia*; ZIMMERMANN (441).—Hermaphroditism of *Nudibranchiata sacoglossa*; PELSENEER (281).—Oysters of the N. W. Coast of the United States are hermaphrodite and viviparous; SCHIELDT (335).

## 11. EMBRYOLOGY.

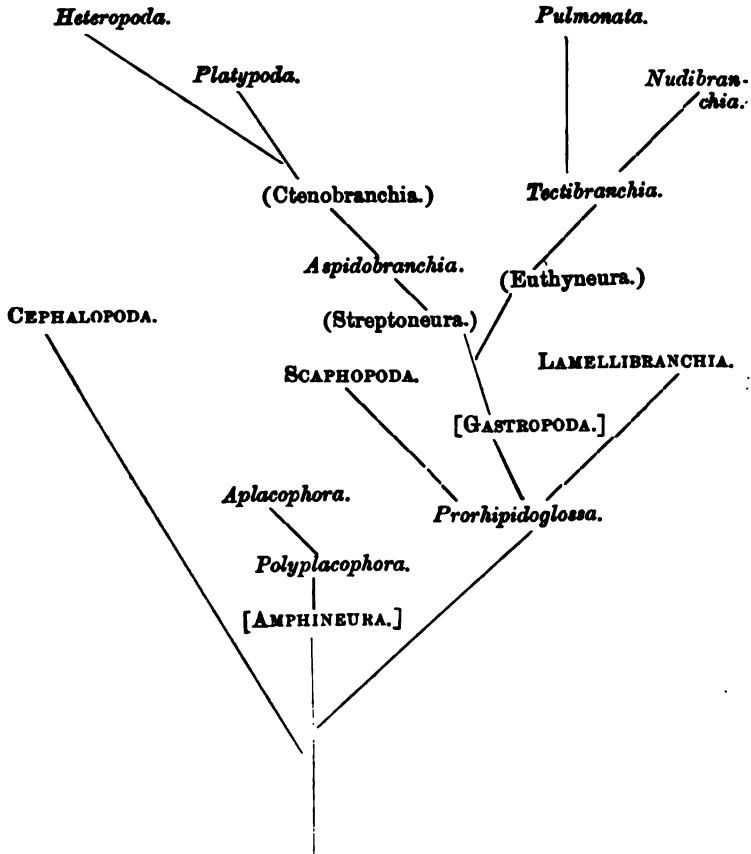
Development of *Cephalopoda*; KORSCHULT (214).—Differentiation of the germinal layers in *Cephalopoda*; KORSCHULT (215).—Notes on the embryology of the *Pteropoda* [in Russian]; KNIPOVICH (210).—Development of *Bythinia tentaculata*; ERLANGER (118).—Development of *Capulus hungaricus*; ERLANGER (119).—Cleavage of the ovum in *Crepidula fornicata*; CONKLIN (81).—Embryology of Chiton; METCALF (253).—Embryogeny of *Proneomenia*; PRUVOT (310).—Development of *Dreissen[ia] polymorpha*; KORSCHULT (213).

## 12. PHYLOGENY AND CLASSIFICATION.

PELSENEER (278) classifies the *Mollusca* as follows :—

<i>Amphineura</i> . . . . .	{	<i>Polyplacophora</i> .			
	{	<i>Aplacophora</i> .			
<i>Gastropoda</i> .	{	<i>Streptoneura</i> . . {	<i>Aspidobranchia</i> . . {	<i>Rhipidoglossa</i> .	
				<i>Docoglossa</i> .	
	{	<i>Ctenobranchia</i> . . {	<i>Platypoda</i> .		
				<i>Heteropoda</i> .	
		<i>Euthyneura</i> . . {	<i>Opisthobranchia</i>	{	<i>Tectibranchia</i> .
			[including <i>Pteropoda</i> ].		<i>Nudibranchia</i> .
		<i>Pulmonata</i> . . .		{	<i>Stylommatophora</i> .
				{	<i>Basommatophora</i> .
<i>Scaphopoda</i> . . . . .		<i>Solenochoncha</i> .			
<i>Lamellibranchia</i> . . . . .	{	<i>Protobranchia</i> .			
		<i>Filibranchia</i> .			
		<i>Pseudolamellibranchia</i> .			
		<i>Eulamellibranchia</i> .			
		<i>Septibranchia</i> .			
<i>Cephalopoda</i> . . . . .	{	<i>Dibranchia</i> .			
		<i>Tetrabranchia</i> .			

The phylogenetic relationships of these groups are expressed in the following tree :—



Pelseneer concludes that the affinities of the *Mollusca* are to be sought in the *Polychata errantia*, and that, of existing forms, the *Eunicida* seem, from the *ensemble* of their organization, the least removed from the *Mollusca*.

Classification of *Cephalopoda*; BLAKE (25).—Morphology and Phylogeny of †*Stephanocerus sigzac* series; BUCKMAN (53).—Phylogenetic relationships of the species of †*Olicostephanus* from the Speeton Clay; PAVLOW (277).

PILSBRY (294) invites criticism on the following proposed classification of the Helices:—

## Group I. MACROON.

- Genus *Acavus*.
- Genus *Stylodonta*.
- Genus *Helicophanta*.

## Group II. BELOGONA.

- Genus *Helix*.
- Genus *Leucochroa*.
- Genus *Allognathus*.
- Genus *Cochlostyla*.
- Genus *Polymita*.
- Genus *Hemitrochus*.
- °Genus *Glyptostoma*.
- °Genus *Acanthinula*.
- °Genus *Valonia*.

## Group III. TELEOPHALLA.

- Genus *Sagda*.
- Genus *Cysticopsis*.

## Group IV. EPIPHALLOPHORA.

- Genus *Caracolus*.
- Genus *Camæna*.
- Genus *Camænella*.
- Genus *Obba*.
- Genus *Chloritis*.
- Genus *Papuina*.
- °Genus *Planispira*.

## Group V. HAPLOGONA.

- Genus *Polygyra*.
- Genus *Eudodonta*.
- Genus *Patula*.
- Genus *Trochomorpha*.
- Genus *Anoglypta*.

## Group VI. POLYPLACOGNATHA.

- Genus *Punctum*.
- Genus *Laonia*.

## GENERA OF DOUBTFUL POSITION.

In addition to those marked ° above, the systematic position of the following genera is doubtful:—

*Strobilops*.  
*Ampelita*.  
*Pedinogyra*.

*Polygyratia*.  
*Macrocyclus*.  
*Salaropsis*.

VON JHERING (195) recognizes 7 genera in *Helicidæ*, which he arranges phylogenetically thus:—

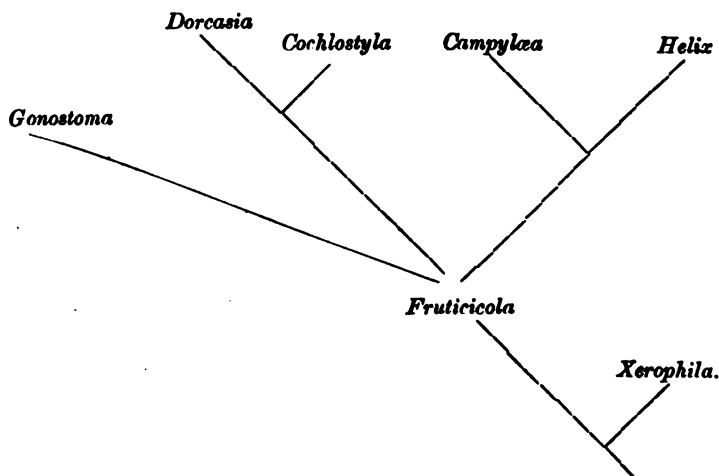
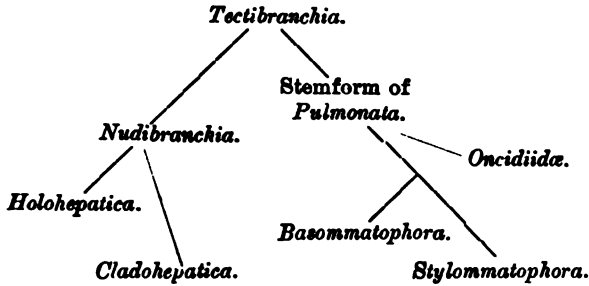


PLATE (306), p. 42, thus expresses the phylogeny of the *Pulmonata* and *Opisthobranchiata* :—



The *Nudibranchiata* are *Pleurobranchæa* specialized by the loss of a gill. The *Tritoniidæ* are the oldest forms, from these spring the *Dorididæ* (through the *Polyceridæ*) and the *Eolidiidæ*, of which last the *Elysizæ* (or *Sacoglossa*) are specialized forms ; PELSENEER (282).

BERGH (17) classifies the *Gasteropoda Nudibranchiata* as follows :—

A. NUDIBRANCHIATA CLADOHEPATICA.

Fam. <i>Aeolidiæ</i> .	Fam. <i>Scyllæidæ</i> .
Fam. <i>Tethymelibidæ</i> .	Fam. <i>Phylliroidæ</i> .
Fam. <i>Lomanotidæ</i> .	Fam. <i>Pleurophyllidiæ</i> .
Fam. <i>Dotonidæ</i> .	Fam. <i>Pleuroleuriæ</i> .
Fam. <i>Dendronotidæ</i> .	Fam. <i>Tritoniæ</i> .
Fam. <i>Bornellidæ</i> .	

B. NUDIBRANCHIATA HOLOHEPATICA.

Fam. *Dorididæ cryptobranchiata*.

Subfam. *Bathydorididæ*.

Subfam. *Hexabranchidæ*.

Subfam. *Archidorididæ*.

Subfam. *Discodorididæ*.

Subfam. *Diaululidæ*.

Subfam. *Cudlinidæ*.

Subfam. *Kentrodorididæ*.

Subfam. *Platydorididæ*.

Subfam. *Chromodorididæ*.

Subfam. *Miamiridæ*.

(*Dorididæ cryptobranchiata*).

Fam. *Porostomata*.

Subfam. *Doriopsidæ*.

Subfam. *Phyllidiæ*.

Fam. *Dorididæ phanerobranchiata*.

Subfam. *Polyceræ*.

Subfam. *Goniodoridæ*.

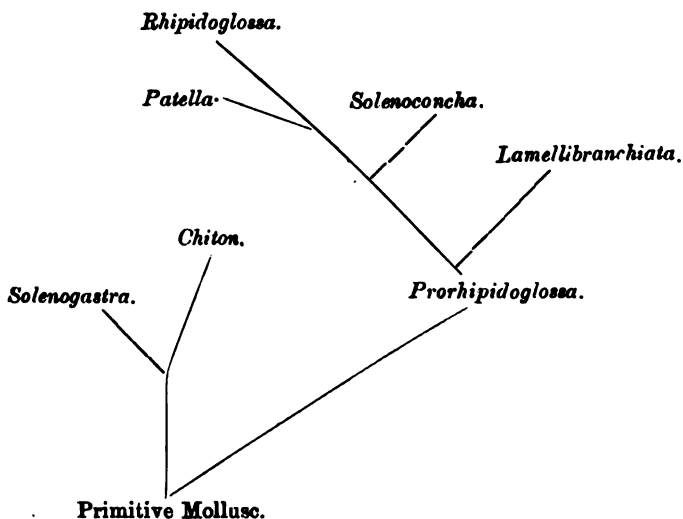
(*Dorididæ phanerobranchiata*).

Fam. *Corambidæ*.

Systematic position of *Naticidæ* and *Calyptræidæ* ; HALLER (167).—  
Tables of phylogenetic relationships of *Eulimidæ* and *Pyramidellidæ*  
from the Tertiaries of Piedmont and Liguria ; SACCO (325).



The *Scaphopoda* are considered by PLATE (307) to have branched off from the *Prorhipidoglossa* after the *Pelecypoda* and before *Patella*; he expresses his conclusions thus:—



Classification of the *Pelecypoda*, based partly on the gill-structure, partly on the hinge characters; GROBBEN (163, 164).

Origin of the genera of non-marine *Mollusca*; COOKE (82).—Origin of some varieties of *Mollusca*; FAURE (124).—Classification of varieties of *Helix hortensis* and *H. nemoralis*; EYRE (121), MACDONALD (234).

### 13. STRAY NOTES.

Habits of the Mediterranean *Argonaut* with figure of position when swimming; LACAZE-DUTHIERS (217).—Burrowing habits of certain land Molluscs; COLLINGE (78).—Perforation of limestone rocks by *Lithodomus*; CARAZZI (57).—Comparison of movements of rotation in *Articulata* and *Mollusca*; PETIT, Act. Soc. L. Bord. xliv, pp. 349–351.—Fertility of *Physa heterostropha*, Say; POTEAT (309).—Effects on a Snail of a median section of its brain; PETIT, Act. Soc. L. Bord. xlv, pp. 119 & 120, 1 pl.—Phosphorescence in *Latia lateralis*, Gould; SUTER (394).—Filtration of water by *Mollusca*; VIALLANES (417).—Appearance of *Mollusca* in isolated ponds; REID, Tr. Norw. Soc. v, pp. 279 & 280.—Locomotion (*Bewegung*) of certain tropical *Mollusca*, more especially byssiferous examples; SLUITER (362).—Disappearance of *Spondylus gaderopus* and other species from Maltese waters; CARUANA-GATTO (59).—W. A. GAIN, Brit. Nat. 1892, has a series of notes on the subject of varieties. He begins by deprecating the naming of slight variations from the normal forms, p. 15: in another part, p. 283, he places on record two worthless variations as new to Britain.—Monstrosities and deformations

in the Molluscan shell; TUNIOT (410A).—Monstrosities of *Littorina rudis*, Maton; SYKES (396).—Effects of freezing and desiccation on Snails; KOCBS, Biol. Centralbl. xii, pp. 337 & 338.—Dissolution of the shells of *Mollusca* in the digestive cavity of fish and the bearings of this on fossilization; CHAPER, Bull. Soc. Géol. xx, pp. 114–117.—“Instinct and genera”; HEMPHILL (181).—Parasites of freshwater *Mollusca* of Cairo; SONSINO, in Festschr. B. Leuckarts, pp. 134–146, 1 pl.—*Cercari-deum* of *Helix hortensis* and its development into *Distomum*; BLOCH-MANN, CB. Bakt. Parasit. xii, pp. 649–652.—*Mollusca* consumed as food by Birds; LOENS, Zool. Gart. xxxiii, pp. 49–51.

#### 14. ECONOMICS.

Uses of shells among the Papuans; HEDLEY (172A).—*Paludina japonica*, Mart., for sale in the Chinese market, San Francisco; WOOD, Naut. v, p. 114.—Japanese *Anodonta*, brought to San Francisco markets; WOOD, Naut. vi, p. 51.—Freshwater *Mollusca* in the kitchen middens of Florida; MOORE, Am. Nat. xxvi, p. 914.—Application to Oyster culture of the filtration of water by *Mollusca*; VIALLANES (417).

#### 15. COLLECTION, PRESERVATION, MUSEUMS, &c.

Instructions for collecting, &c.; DALL (105).—Method of taking Water-snails; LOENS (227).—Collecting notes; SIMPSON (347).—Shell collecting at Eastport, U.S.; ROPER, Naut. vi, pp. 49 & 50.—Notice of the collection of H. A. Ward; PILSBRY, Science, xx, p. 369.—Schlüter's Catalogue a simple list: the generic and subgeneric values attributed to him cannot stand; FISCHER (129A).

### III.—DISTRIBUTION.

#### GEOGRAPHICAL.

##### NON-MARINE MOLLUSCA.

##### a. PALÆARCTIC ZONE.

New palæarctic species; WESTERLUND (428 & 430).

##### 1. Septentrional Region.

British Isles: The Conchological Society's List, Journ. Conch. vii, pp. 49–66.—Remarks on distribution in the British Isles; SCHARFF (330).—Catalogues of British Slugs; COLLINGE (80): summary of *ib.*; COCKERELL (72 & 74).—Review of British *Arionida*; COLLINGE (79): and criticism by COCKERELL (70).—A list of species and varieties of non-marine *Mollusca*, alleged to be peculiar to the British Islands, occurs

in Wallace's *Island Life*, 2nd edition, pp. 357-359, republished by the compiler; COCKERELL, *Nature*, xlv, pp. 76 & 77: see also SCHARFF, *t. c.*, p. 173.—Cumberland: non-marine of; SMITH (363).—Derbyshire: additions to list; ADAMS (2).—Devon: additions to the S. Devon list; OLDHAM (272).—Dorset: bibliography of non-marine forms; SYKES (397).—Gloucestershire: list; WITCHELL & STRUGNELL (437).—Herefordshire: list; BOYCOTT (41), VIZE (421).—Merionethshire: specimens taken in; CHASTER (63).—Northamptonshire: bibliography; CRICK (92).—Sussex: bibliography, *Conchologist*, ii, pp. 30-33.—Westmoreland: non-marine of; SMITH (363).—Worcestershire: shells of Stourport; WILLIAMS (434).

Scotland: additions to the Scotch fauna; ROEBUCK (318).—Species in Bute; SCOTT (341).—List of shells from Eigg; McMURTRIE (237).

Ireland: Irish non-marine; SCHARFF (332).—*Planorbis riparius*, West, added to the British fauna from Lough Swilly; MILNE, *Irish Nat.* 1892, p. 192 [misidentification, = *P. nautilus*, Linn.].—*Helix lampra*, alleged new species [= *H. ericetorum*]; WESTERLUND (428).

Channel Isles: *Pupa ringens* in Guernsey; MARQUAND, *Journ. Conch.* vii, p. 44.

Belgium: *Anodonta thotellerii*, n. sp.; DROUET (115).

France: *Mollusca* of the Seine-Inférieure; BUCAILLE (50).—*Alexia armoricana*, n. sp. [?], W. coast of France; LOCARD (222).—*Mollusca* of the Department of the Somme; BIZET (24).—List of bivalve *Mollusca* collected in the Seine near Elbeuf [of no value]; LANCELEVÉE, *Bull. Soc. d'Elbeuf*, x, pp. 51 & 52.

Germany:—Baden: list of the shells of the North Baden Black Forest; SANDERGER (327).—Bavaria: *Unio clessini*, n. sp., from the Danube [i.e. the Donau] at Lapingen; DROUET (115).—Borkum Is.: list of 30 species, including *Alexia myosotis*, Drap., new to Germany, and *Assiminea grayana*, Leach; SCHNEIDER (337).—Brandenburg: occurrence of *Helix ericetorum* and *H. candicans* at Landsberg-a-Warthe; KRAUSE, *SB. nat. Fr.* 1892, p. 141; rare *Mollusca* of Mark Brandenburg; MARTENS (242).—Saxony: supplement to list of *Mollusca* from near Leipzig; EHRMANN (117).—Silesia: notes on 6 species; LOENS (228).—Westphalia: *Molluscan fauna*; HESSE (185).—*Gastropoda* of Münsterland; LOENS (230).—Supplemental list of 30 species; LOENS (229).—Württemberg: *Molluscan fauna* of Saulgau; MOENIG (259).

Sweden: *Hyalinia upsalaensis*, n. sp., WESTERLUND (428).

Switzerland: *Helix (Patula) chaperi*, n. sp., WESTERLUND (428).—Recent *Mollusca* of Appenzell and St. Gallen; MARTENS (240).—*Molluscan fauna* of Graubünden; STEIN (383).—*Mollusca* found at Meiringen; HORSLEY (190).—List of 46 species, with varieties, from Richisau (Canton Glarus); BLUM (27).—*Mollusca* of Pays-d'Enhaut, Vaudois; PITTIER & GÉTAZ, *Bull. Soc. Vaud.* xxvii, pp. 209 & 210.

## 2. Circum-Mediterranean Region.

Species of *Helix* (*Xerophila*), with 20 new species ; POLLONERA (308).

Spain : *Helix*, 4 new species ; *Cionella disparata*, n. sp. ; WESTERLUND (428).—*Helix*, 5 new species : *Pupa retracta*, *Buliminus hispalensis*, *Cionella virginea*, *Physa clathrata*, *Melanopsis harpa*, *Neritina mixta*, n. spp. ; WESTERLUND (430).—*Mollusca* of the Pyrenees, French and Spanish ; FAGOT (122).

France : *Mollusca* peculiar to the extreme S. W. of France ; FOLIN (135).—Pupa, 4 new species from the Pyrenean Dept. ; WESTERLUND (428).—Malacological fauna of Carcassonne ; BAICHÈRE (10).—*Mollusca* of the Peninsular of Sainte-Lucie (Aude) ; FAGOT (123).—Alleged new species of *Lartetia*, *Moitessieria*, *Bithinella*, and *Acme*, from near Avignon ; NICOLAS (269).—*Belgrandia coutagnei*, n. sp. [?], Avignon ; LOCARD (223).—Terrestrial *Mollusca* of other Isles in the roadstead of Marseilles ; COUTAGNE (89).

Italy : *Pupa honesta*, n. sp. ; WESTERLUND (430).—*Helix neptuni*, n. sp. ; WESTERLUND (428).—Catalogue of species in and around the Province of Modena ; PICAGLIA (286).—List of species from Lake Lugano and its shores ; BROEMME (45).—Species from Ascoli-Piceno ; MASCARINI (247).

Sardinia : *Helix modestissima*, n. sp. ; WESTERLUND (428).

Capri Is. : List of 26 species ; BLUM (26).

Sicily : *Hyalinia*, 2 new species ; *Helix masthorella*, n. sp. ; WESTERLUND (428).—*Pupa refuga*, *Pomatias sireticus*, n. spp. ; WESTERLUND (430).—*Pseudamnicola nebrodensis*, n. sp. [= *Vestita*, Benoit] ; KOBELT, in ROSSMAESSLER (322) v.

Malta : *Clausilia melitensis*, n. sp., CARUANA-GATTO (58) ; *Oscilianella*, 3 new species, *id.* (60) ; Occurrence of *Assiminea littorina*, *id.* (61).—*Cionella*, 3 new species ; WESTERLUND (430).

Austro-Hungary :—Carinthia : *Anodonta*, 2 new species [?] ; KOBELT, in ROSSMAESSLER (322) vi ; Growth of the shell of the mussels in Lake Würther ; GALLENSTEIN (142).—Carniola : *Clausilia vestigans*, n. sp., WESTERLUND (428).—Dalmatia : *Pupa appelinsi*, n. sp. ; WESTERLUND (428).—Hungary : *Mollusca* of the environs of Göna, 69 species ; SZÉP (398).—Siebenburgen : *Clausilia denbeli*, n. sp. ; WESTERLUND (428).—Bozonia : List of species with *Zonites tenerrimus*, *Helix osoria*, *Delima optabilis*, n. spp. (1890), BRANCSIK (42) ; *Bythinella bosniensis*, n. sp., CLESSIN (65) ; *Clausilia calabacensis*, n. sp., WESTERLUND (428) ; *Helix broemmeri*, n. sp., from Acarnania, KOBELT, in ROSSMAESSLER (322) v ; *Pseudamnicola euboica*, n. sp., Euboea ; KOBELT, in ROSSMAESSLER (322) v.

Greece : *Unio thiesae*, n. sp., *Anodonta*, 3 new species ; DROUET (115).—*Helix giurica* and *Clausilia broemmeri*, n. spp., with notes on other species and some new varieties from Greece and Giura Is. ; BÖTTGER (32).—Corfu : *Unio helenae*, n. sp. ; DROUET (115).—Sofrauo Is. [? Sofraua Nisia] : *Buliminus mestus*, n. sp. ; WESTERLUND (428).

Crete : *Hyalinia spratti*, *Helix medea*, n. spp. ; WESTERLUND (428).

Roumania : *Buliminus montandoni*, n. sp., from Dobrudscha ; WESTERLUND (428).

Caucasus : rapacious *Mollusca* ; SIMROTH (351) : *Limacidae*, with 4 new species, and *Testacellidae* ; SIMROTH (352) : Testaceous *Mollusca*, with *Hyalinia horsti*, n. sp. ; BËTTGER in SIMROTH (355).

Asia Minor : *Buliminus movradii, ponsonbyi*, n. spp. ; WESTERLUND (428).

Syria : *Helix*, 2 new species, *Clausilia calopleura*, n. sp. ; WESTERLUND (428).

Palestine : *Helix patriarcharum*, *Buliminus granulatus*, n. spp. ; WESTERLUND (428).

Egypt : *Helix*, 2 new species ; WESTERLUND (428).—Libya : *Helix apaturia*, n. sp. ; WESTERLUND (428).

Tunis : *Helix hypsa*, n. sp. ; WESTERLUND (428).

Algeria : *Helix*, 4 new species, *Buliminus djurdjurenensis*, n. sp., *Cionella*, 2 new species ; WESTERLUND (428).

Morocco : *Cionella extrema*, n. sp. ; WESTERLUND (428).

### 3. Central Asiatic Region.

Transcaspiä : 11 forms enumerated, including 3 new species and 2 new varieties ; ROSEN (321).—Turkestan : *Limax natalianus* from Semiretschje ; MIKHAILIS (254).

### 4. Chinese Region.

*Mollusca* from the Valley of the Blue River, with a large number of new species ; HEUDE, 1890 (186) ; MOELLENDORF (257) criticises Heude. —Hainan Is. : 4 species added to fauna ; FISCHER (130).

### 5. Japanese Region.

Liu-Kiu Is. : List of 19 species from the Middle Is., *Ennea densetostata* and *Trochomorpha fritzei*, n. spp. ; BËTTGER (33).

### 6. Atlantidean Region.

Madeira : relation of the non-marine *Mollusca* to those found elsewhere ; WATSON (426).

### b. PALÆOTROPICAL AFRICAN ZONE.

Twelve new species from N. E. Africa ; MARTENS (243).

### 7. Central African Region.

Becuanaland : *Buliminus layardi*, n. sp. ; MELVILL & PONSONBY (251).—Tanganika : illustrations of freshwater *Mollusca* from Lake Tanganika ; BOURGUIGNAT (36) 1888 : *Cyclostoma burtoni*, n. sp. ;

ANCEY (5).—Uganda: *Helix bellula* and *Ennea stuhlmanni*, n. spp.; MARTENS (241).—Usambara: *Ennea grossa*, n. sp.; MARTENS (244).—Victoria Nyanza: *Limnaea nyansæ*, *Physa trigona*, n. spp., *Vivipara*, 3 new species from Victoria Nyanza; MARTENS (241): *Paludina constricta* and *Spatha subæquilatera*, n. spp.; MARTENS, Conch. Mittheil. iii, 1889: shells from Victoria Nyanza, with *Viviparus*, 3 new species; SMITH (366): *ib.* with *Ampullaria*, 2 new species, *Planorbis victoriæ* and *Sphaerium nyansæ*, n. spp.; SMITH (366A).

### 8. West African Region.

*Pseudoglessula*, n. sect., *Stenogyra*, with 2 new species; BÆTTGER (34).—Angola: *Buliminus quisqualis*, n. sp.; MELVILL & PONSONBY (251).—Cameroons: *Achatina pyramidella*, *Ennea conospira*, *Cyclophorus preussi*, n. spp.; MARTENS (244).—Congo: *Stenogyra badia*, n. sp.; MARTENS, Conch. Mittheil. iii, 1889.—Dahomey: *Perideris lechatelieri*, n. sp.; DAUTZENBERG (108).—Damaraland: *Pupa ovampoensis*, *Stenogyra chapmani*, *Cionella ovampoensis*, n. spp., from Ovampo-Land; MELVILL & PONSONBY (251).—Gaboön: *Achatina dimidiata*, n. sp.; MARTENS, Conch. Mittheil. iii, 1889.—Senegambia: *Ennea kendigiana*, n. sp.; ROLLE (320).—St. Helena: land shells, with 11 new species; SMITH (364).

### 9. South African Region.

*Ennea*, 7 new species, *Ærope*, 2 new species, *Vitrina*, 2 new species, *Macrocyclus*, 2 new species, *Helix farquhari*, n. sp., *H. (Pella)*, 11 new species, *H. (Trochozonites) dioryæ*, n. sp., *Planorbis segmentina*, n. sp.; MELVILL & PONSONBY (250-252).—*Apera burnupi*, n. sp.; SMITH (368).—*Ennea consobrina*, n. sp.; ANCEY (6).

### 10. Malagasy Region.

Madagascar: *Acroptychia notabilis*, n. sp.; SMITH (373): Nossi-Bé Is., 3 new species; BÆTTGER (31).—Mauritius: notes on shells from the; BAKER (11).

## c. PALÆOTROPICAL ORIENTAL ZONE.

### 12. Indian Region.

Specimens from Karachi; ADAMS (1).—Ceylon: *Vaginula sarasinorum* from Candy; SIMBOTH (356): *Unio corbeti*, n. sp., from Lake Kaudy; DESCHAMPS (112).

### 13. Indo-Chinese Region.

Catalogue with geographical distribution of Indo-Chinese species; FISCHER (128): 5 new species, land *Mollusca*; MORLET (264).—Assam:

*Helix fultoni*, n. sp., from the Khasi Hills (?); GODWIN-AUSTEN (150): *Diplommatina*, 26 new species from the Garo, Naga and Manipur Hills; GODWIN-AUSTEN (149).—Cambodia: *Ampullaria brohardi*, n. sp.; GRANGER (154).—Laos and Tonkin: 10 new species; MORLET (263 & 264).—Singapore: *Vaginula curusi*, n. sp.; SIMROTH (356).

#### 14. Indo-Malay Region.

List of Indo-Malay genera which extend to the Philippines; COOKE (83).—Borneo: *Unio*, 6 new species, *Pseudodon*, 2 new species; DROUET & CHAPER (115A).—Java: *Vaginula*, 5 new species; SIMROTH (356).—Sumba, Timor, &c.: Non-marine *Mollusca*, 6 new species; SCHEPMAN (333).—Sumatra: *Nanina dohertyi*, n. sp.; ALDRICH (3): *Vaginula sumatrensis* and *weberi*, n. spp.; SIMROTH (356).—Timor Laut: list of 20 species including 15 new; MOELLENDORFF (258).

#### 15. Philippine Region.

Philippines: geographical distribution of the land forms; COOKE (83): *Vaginula chavesii*, n. sp., from Mindanao; SIMROTH (356): *Unio serradelli*, n. sp.; DROUET (115).

#### d. AUSTRALIAN ZONE.

#### 16. Austro-Malay Region.

Celebes: *Vaginula graffi*, n. sp.; SIMROTH (356).—Saleijer Is.: *Vaginula vivipara*, n. sp.; SIMROTH (356).—Moluccas: 9 species from Halmahera (3 new species *Helix*, 2 new species *Leptopoma*); STRUBELL (389): *Vaginula bocasei*, n. sp.; SIMROTH (356): *Acochlidium amboinense* and *paradonum*, nom. nud. for two freshwater species from Amboina; STRUBELL, SB. niederrhein. Ges. xlix, p. 62.—New Guinea: list of a few species collected by Sir W. MacGregor on the Fly River; HEDLEY (172): Jawa, radula, and genitalia of some British New Guinea land *Mollusca*, HEDLEY (174); ? *Helix hedleyi*, n. sp., SMITH (370).—Solomon Is.: *Helix*, 2 new species, *Bulin[us]us hobsoni*, n. sp., *Hedleya macleayi*, n. g. & sp.; COX (90): *Helix aggiei*, n. sp.; HEIMBURG (180): *Colliacus exigua*, Ad. & Angus, erroneously described as from these Is., is an Australian form and a syn. for *Perrieria australis*, Forbes sp.; HEDLEY (176).

#### 17. Australian Region.

Remarks on the slugs; HEDLEY (178), COCKERELL (68): *Helix everardensis*, *elderi*, n. spp., Elder River, Central Australia; BEDNALL (14).—Queensland: notes on a collection of shells, with 3 new species; HEDLEY & MUSSON (179).—Tasmania: observations on freshwater shells; JOHNSTON (201): variability of the Tasmanian *Unio*; *id.* (202).

18. *Austro-Polynesian Region.*

New Hebrides : *Diplomorpha coxi*, n. sp. ; HARTMAN (169).

19. *Polynesian Region.*

Sandwich Is. : revision of the genera *Pupa* (with 3 new species), *Cæcilianella* (1 new species), and *Helicter* (2 new species) ; ANCEY (8A).

20. *Neozelanian Region.*

New Zealand : lists of *Mollusca* ; SUTER (390) : list of introduced species ; *id.* (391) : list of doubtful species and forms erroneously recorded ; *id.* (391A) : miscellaneous notes ; *id.* (392) : dentition of some forms with *Amphidoza olivacea* and *Phrizagnathus transitans*, n. spp. ; *id.* (393) : notes on land *Mollusca* ; SUTER (394) : notes on New Zealand *Helices* ; PILSBRY (299, 410) : notes on *Pitys*, occurrence of *Ancylus*, on the *Limacidae* and *Arionidae* ; SUTER (395) : *Ptychodon magdalena*, n. sp., 1891 ; ANCEY (5).

## e. NEANTARCTIC ZONE.

21. *Patagonian Region.*

Paraguay : *Vaginula*, 3 new species ; SIMROTH (356).

22. *Chilian Region.*

Chili : *Vaginula chilensis*, n. sp. ; SIMROTH (356).

## f. NEOTROPICAL ZONE.

23. *Peruvian Region.*

Galapagos Is. : Non-marine *Mollusca*, with *Bulimulus*, 1 new sect. and 14 new species, *Pupa*, 2 new species, *Succinea wolffi* and *Helicina wolffi*, n. spp. ; REIBISCH, P. (313) : *Zonites baueri*, *Leptinaria chathamensis*, *Helicina nesiotica* ; DALL (104) : *Bulimus habeli*, *Onchidium lesliei*, n. spp. ; STEARNS (382).

24. *Columbian Region.*

United States of Columbia, 7 new species ; SOWERBY (379).—New Granada : *Helix sieversi*, n. sp. ; MARTENS, Conch. Mittheil. iii (1889).

25. *Brazilian Region.*

Bolivia : *Happia dalliana*, *Guppya anguina*, *Cyclophorus orbignyi*, *Odontostomus lemoinei*, n. spp., and *Helicina*, 3 new species ; ANCEY (7) :



*Nenia orbigny*, n. sp.; ANCEY (6): *Cyane orbigny*, *Nenia orbigny*, *Odontostomus lemoinei*, n. spp.; ANCEY (8).—Brazil: *Systrophia alcidiana*, *Bulinulus germaini*, *Helicina leucozonalis*, n. spp.; ANCEY (7).

## 26. Mexican Region.

*Melaniidae* and *Proserpinidae*; FISCHER & CROSSE (133).—Central America: *Omphalina* 2, *Hyalina* 3, *Guppya* 4, *Pseudohyalina cidariacus*, *Helix altispira*, and *Polygyra* 2 new species; MARTENS (245).—California: Catalogue of non-marine species of Lower California; COOPER (84).—Guatemala: *Neritina sargi* and *Unio usuniasintæ*, n. spp.; CROSSE & FISCHER (98).—Honduras: *Aperostoma goldfussi*, n. sp.; BETTGER (34).—Mexico: *Bulinulus chaperi* and *Anodonta chapalensis*, n. spp.; CROSSE & FISCHER (98): *Patula intonsa*, n. sp., from Orizaba; PILSBRY, in TRYON'S Manual (410): *Eucalodium compactum* and *Potamanax rovirosai*, n. subg. & n. sp., from Tabasco; PILSBRY (293A): *Pachychilus rovirosai*, possible new species; PILSBRY (291).

## 27. Caribbean Region.

West Indies: anatomy of *Caracolus*, 2 species, and *Hemitrochus salvatoris*; PILSBRY (289).—Dominica Is.: notes on a collection of land *Mollusca*, including *Vaginula punctatissima*, Semp., new to loc.; PILSBRY (295).—Haiti: list of *Mollusca*; TIPPENHAUER (406).—Jamaica: *Helix vendryesi*, *Veronicella jamaicensis*, *virgata*, *dissimilis*, alleged new species; COCKERELL (67).—Portorico: catalogue with 130 species; CROSSE (93).

## g. NEARCTIC ZONE.

### 28. American Region.

N. American forms of *Vallonia*; STERKI (384): *Pupidae* of N. America; STERKI (385): North American species of *Succinea*; COCKERELL (73): notes on *Unio luteolus* and *radiatus*; DEAN (110).—Alabama: list of land *Mollusca*; SARGENT (328): *Helix sargenti*, n. sp.; JOHNSON & PILSBRY (200).—Arkansas: *Zonites brittsii*, n. sp.; PILSBRY (297).—Florida: list of *Mollusca* (*Pleurotoma simpsoni*, *Tralia minuscula*, and *Pandora bushiana*, n. spp. by DALL) SIMPSON (349): *Lyogyrus dalli*, n. sp.; PILSBRY (300): Florida *Unionidae* with *Unio subluridus*, n. sp.; SIMPSON (346).—Illinois: *Unionidae* of Spoon River; STRODE (388).—Iowa: *Ancylus obliquus*, n. sp.; SHIMEK (342).—Louisiana: *Mollusca* of Dorchest Bayou and Lake Bisteneau; VAUGHAN (416).—Michigan: shell-bearing *Mollusca*; WALKER (423).—Missouri: occurrence of *Mesodon andrewsi*; SAMPSON (326).—New York: *Mollusca* of Monroe County; WALTON (424): preliminary list of the *Unionidae*; MARSHALL (238).—Ohio: catalogue of non-marine *Testacea* of Portage County; DENN (111).—Texas: *Hyalina laeviuscula*, n. sp.; STERKI (386): *Hydrobia texana*, n. sp. (1887); PILSBRY (296).

29. *Californian Region.*

*Pupidae* of North America ; STERKI (385) : North American species of *Succinea* ; COCKERELL (73).—California : occurrence of *Limax agrestis*, Linn. ; RAYMOND, Naut. v, p. 101.—Arizona : occurrence of *Patula strigosa*, Gould ; STEARNS, Naut. vi, p. 1.

30. *Canadian Region.*

North American forms of *Vallonia* ; STERKI (384) : North American species of *Succinea* ; COCKERELL (73).—New Brunswick : addenda to the *Mollusca* ; GANONG (145).

## MARINE MOLLUSCA.

1. *Arctic Province.*

*Mollusca* from East Spitzbergen, 71 species, including *Pleuroleura walteri*, n. sp. ; KRAUSE (216).

2. *Boreal Province.*

[None.]

3. *Celtic Province.*

British Isles : *Mollusca* of the Liverpool Marine Biological Committee District ; ARCHER (9) : *Nudibranchia* at Puffin Is. ; HERDMAN, Tr. Liverp. Biol. Soc. v (1891), p. 31 : Observations on *Lomanotus genei*, Verany, and *Hancockia eudactylota*, Gosse ; GAMBLE (144) : occurrence of *Pleurophyllidia loveni* in Britain ; M'INTOSH (236), HERDMAN (183), GRIESBACH, Conchologist, ii, p. 72 : Rare *Mollusca* on the Devon Coast ; GARSTANG (146) : marine invertebrate fauna of Plymouth ; GARSTANG, J. Mar. Biol. Ass. ii, pp. 335–337 : *Mollusca* of N. Wales Coast ; TOMLIN (407) : *Mollusca* of the Moray Firth ; SCOTT (340) : list of shells on Ardeer and Irvine beaches, Ayrshire ; SMITH, J. (376) : *Mollusca* from the Coasts of Donegal and Dublin ; HART (168) : list of species from Killala Bay, Ireland ; WARREN (425).

France : *Mollusca* of the Department of the Somme ; BIZET (24).

Germany : *Syndosmya schneideri*, n. sp., from Borkum Is. ; BRETGER in SCHNEIDER (337).

4. *Lusitanian Province.*

Distribution of *Ovula carnea*, Poiret ; FISCHER, P. (129), WATSON (427).—Atlantic : *Oratena fructuosa*, n. sp., and *Pleurobranchillus morosus*, n. g. and sp. ; BERGH (18).—Azores : *Mollusca* obtained by the Prince of Monaco ; DAUTZENBERG (107) 1889 ; many new species : *Euplocamus*.

*atlanticus*, n. sp.; BERGH (18).—Maderia: *Spondylus powelli*, n. sp.; SMITH (370).—West Coast of France: *Mitra aquitanica*, found on the West Coast of France; LOCARD (226): *Clathurella bourguignati, servaini*, n. spp., 1891; LOCARD (220): *Neptunea nicolloni*, n. sp.; LOCARD (220A): *Anomiida* with *Anomia boletiformis*, n. sp.; LOCARD (221): *Chama nicolloni*, n. sp.; DAUTZENBURG (109).—Spain: *Cephalopoda* of the Spanish Coasts; GIRARD (148).—Mediterranean: *Vermetidae*, with 3 new species of *Vermetus*; MONTEROSATO (262).—South Coast of France: Molluscan fauna of Bandol (near Toulon); CAZIOT (62): *Anomiida*; LOCARD (221).—List of *Mollusca* of the neighbourhood of Zara; DANILO & SANDRI (106).—Kalymos Is.: *Polia reticulata*, *asona*, *Alvania rufopunctata*, *Gibbula eliadum*, and *valentini*, n. spp.; BÆTTGER (35).—Malta: Disappearance of *Spondylus gaderopus*, &c.; CARUANA-GATTO (59).

### 5. Aralo-Caspian Province.

[None.]

### 6. West African Provinces.

Mogador: *Lepidopleurus granoliratus*, n. sp.; TRYON'S Manual (409).—*Octopus sponsalis* and *ergasticus*, n. spp., W. coast, off the Sahara littoral; FISCHER, P. & H. (134).—Senegambia: *Pisania scholviemi* and *Turritella malisani*, n. spp.; ROLLE (320).

### 7. South African Provinces.

Catalogue, with 1 new genus and 43 new species; SOWERBY (378).—St. Helena: additions to the fauna, with *Jeffreysia atlantica* and *Tellinomya producta*, n. spp.; SMITH (367).

### 8. Indo-Pacific Province.

Mauritius: notes on shells; BAKER (11): *Pecten crouchi*, n. sp.; SMITH (365).—Red Sea: remarks on the fauna; JOUSSEAUME (204).—Persian Gulf: pearl *Mollusca*; GALLETLY (143).—India: *Nucula fultoni*, n. sp., Bay of Bengal; SMITH (371).—Indo-China: Catalogue with geographical distribution of Indo-Chinese species; FISCHER (128).—Gulf of Siam, W. of Cambodia, 27 species; CROSSE & FISCHER (95).—Hongkong: *Ischnochiton asperior* and *bisculptus*, n. spp.; TRYON'S Manual (409): *Pyrula filosa*, n. sp.; SOWERBY (380).—Liu-Kiu Is.: list of 167 species, *Monilea fritzei* new; BÆTTGER (33).—Philippines Is.: *Ischnochiton solidior*, n. sp.; TRYON'S Manual (409).—Australia: *Cephalopoda* and *Pteropoda*; BRAZIER (44).

### 9. Australo-Zelandic Province.

Australia: *Ischnochiton cariosus* and *haddoni*, n. spp.; TRYON'S Manual (409).—Descriptions of 1 new genus and 11 new species of marine

*Mollusca* from South Australia; TATE, (399) 3rd Suppl. to list of Australian *Pelecypoda*; *id.* (399A).—*Glaucus atlanticus*, Forster, washed ashore, New S. Wales; HEDLEY (173).—*Cephalopoda* and *Pteropoda* of Australia and Tasmania; BRAZIER (44).—Tasmania: *Callochiton lobatus*, n. sp.; TRYON'S Manual (409): *Columbella unisulcata*, n. sp.; KOBELT, in MARTINI & CHEMNITZ (246).—New Zealand: *Spongiociton productus*, n. sp.; TRYON'S Manual (409).

#### 10. Japonic Province.

Japan: *Volutharpa salmiana*, n. sp.; ROLLE (320): *Thylacodes medusæ*, n. sp.; MACGEORGE (235): Japanese *Patellidæ*; TAYLOR (401): *Lepidopleurus curvatus* and (?) *Ischnochiton asperior*, n. sp.; TRYON'S Manual (409).—Bonin Is.: *Ischnochiton multidentatus*, n. sp.; TRYON'S Manual (409).

#### 11. Aleutian Province.

[None.]

#### 12. Californian Province.

*Fiurellidæ* of the United States; PILSBRY & JOHNSON (303).—California: *Loligo stearnsii*, n. sp. [?]; HEMPHILL (182): *Margarita (Turricula) bairdii*, n. sp.; DALL (101) 1889: *Uvanilla regina*, n. sp.; STEARNS (382): *Chatopleura gemmea*, n. sp., and *Ischnochiton*, 9 new species; TRYON'S Manual (409).—Lower California: *Mitra fulloni*, n. sp.; SMITH (365): *Lepidopleurus rugatus*, n. sp., and *Ischnochiton*, 2 new species; TRYON'S Manual (409).—Monterey Bay: *Scaphella arnheimi*, n. sp.; RIVERS (317).—San Pedro Bay: catalogue of shells from (*Vitri-nella williamsoni* and *Amphissa bicolor*, n. spp., DALL); WILLIAMSON (435).

#### 13. Panamic Province.

Ecuador: *Littorina atyphus*, n. sp., Manta; STEARNS (382).—Galapagos Is.: *Nitidella incerta* and *Littorina galapagensis*, n. spp.; STEARNS (382).

#### 14. Peruvian Province.

[None.]

#### 15. Antarctic Province.

[None.]

#### 16. Patagonian Province.

Gorriti Is.: *Chatopleura armillata*, n. sp.; TRYON'S Manual (409).

17. *Caribbean Provinces.*

Descriptions of species dredged in the Gulf of Mexico, including many new; DALL (101) 1889: *Fissurellidæ* of the United States; PILSBRY & JOHNSON (303): List of *Mollusca* (with *Pleurotoma simpsoni*, *Tralia minuscula*, *Natica fordiana*, and *Pandora bushiana*, n. spp., by DALL); SIMPSON (349).—Florida Keys: *Ischnochiton floridanus*, n. sp.; TRYON'S Manual (409).—Haiti Is.: list of *Mollusca*; TIPPENHAUER (406).

18. *Transatlantic Provinces.*

Descriptions of species dredged, including many new; DALL (101) 1889: *Fissurellidæ* of the United States; PILSBRY & JOHNSON (303).—New Jersey: Coast shells, with figs.; FORD (136): *Chrysodomus stonei*, n. sp.; PILSBRY (293): *Crepidula*, STONE (387).

## GEOLOGICAL.

Summary of Palæontological work done during 1890: *Cephalopoda*, by E. HAUG, *Gastropoda*, by M. COSSMANN; Ann. Geol. Univ. pp. 957-1024.

Palæontology of New Guinea; ETHERIDGE, in THOMPSON'S "British New Guinea," London, 1892, 8vo, pp. 208-215.

Fossil types in the Bath Museum; P. Bath N. H. Soc. vii, pp. 270-279.

## 1. QUATERNARY.

Pleistocene non-marine *Mollusca* found in the Admiralty section; ABBOTT, P. Geol. Ass. xii, p. 356.—List of *Mollusca* from the Pleistocene deposits at West Wittering, Sussex; REID, Q. J. Geol. Soc. xlviii, p. 357.—Notes on marine shells from the Post-pliocene deposits of Manchester; ROEDER, Tr. Manch. Geol. Soc. xxi, pp. 607-619.—*Mollusca* from raised beach at Fillyside, between Leith and Portobello, N.B.; SCOTT (339).—Malacological fauna of recent deposits at Brussels; RAEYMAEKERS, Bull. Soc. Mal. Belg. 1891 [1893], pp. vii-xi.—Post-glacial *Mollusca*, with *Rissoa parva*, at Åland, Sweden; MADSEN, Geol. Fören. Stockholm Förhandl. xiv, pp. 585-590.—List of non-marine *Mollusca* from the alluvial marls of Cotta, near Dresden; REIBISCH, T. (314).—Silurian *Cephalopoda* from the alluvial beds of Mecklenburg; RUEDIGER (324).—Pliocene and quaternary Molluscan fauna of the environs of Oran; PALLARY, CR. Ass. Fr. Sci. 1891, ii, pp. 383-387, figs.—Recent fossils of the Harbour and Back Bay, Boston; UPHAM (415).—Fossils of the Loess of E. Nebraska and W. Iowa; SHIMEK, Bull. Lab. Iowa, i, pp. 200-214, ii, pp. 89-93.—Post-tertiary shells collected in a dry salt lake near Eddy, Mexico; STERKI, Rep. Geol. Surv. Texas, iii, pp. 263-265.—Post-tertiary *Mollusca* of Queensland; JACK & ETHERIDGE (193) pp. 640-646.

## 2. TERTIARY.

Belgium: *Aspidopholas stuinieri*, n. sp., from the Tertiary of Antwerp; VINCENT (419).—France: marine *Mollusca* of the Basin of the Rhone; FONTANNES, Études strat. and paléont. periode tert. dans le Bassin du Rhone, x, Paris, 1892, 8vo.—Germany: older Tertiary fauna of the neighbourhood of Berlin, with new species; KOENEN, JB. k. preuss. geol. Landesanst. xi, Abh. pp. 257–276, figg.—Austro-Hungary: *Gastropoda* from Häring, Tirol, with 15 new species; DREGER (114): fossil fauna of Markusevec in Croatia, 49 new species, *Baglivia*, n. g.; BRUSINA (49): Tertiary Rudistes, *Ceratoconcha costata*, n. g. & sp., 1889, from Agram; GORJANOVIĆ-KRAMBERGER (153).—Italy: Upper Tertiary *Pectunculus*; GREGORIO (155): Non-marine *Mollusca* of the Province of Modena; PICAGLIA (286).—Tertiary species (many said to be new) of *Eulimidae* and *Pyramidellidae* from Piedmont and Liguria; SACCO (325).—Sardinia: *Spirulirostrina lovisatoi*, n. g. & sp.; CANAVARI (56).—Molluscan fauna of Florida, pt. ii, completing the *Gastropoda*, *Pteropoda*, *Polyplocophora*, and *Scaphopoda*, with very many new species, and *Glyptostyla panamensis*, n. g. & sp., from the Tertiary beds of Panama; DALL (102).—New Guinea: Tertiary *Mollusca*; JACK & ETHERIDGE (193) pp. 692–694.

Pliocene: Lists of pliocene *Mollusca* from the environs of Montpellier; VIGUIER, C.R. Ass. Fr. Sci. 1891, ii, pp. 405–416, 1 pl.—Italy: Pliocene *Lamellibranchiata* from upper and central Italy; PANTANELLI (276).—Pliocene *Mollusca* of Cerreto-Guidi and confines, with *Conus caroli*, *Arca ilia*, and *Lepton stefanii*, n. spp.; FUCINI, Boll. Soc. geol. Ital. x, pp. 59–86, 1 pl.—Pliocene of Bologna, with *Pholadomya elegantula*, n. sp.; FORESTI (138).—New Zealand: Pliocene *Mollusca*; HUTTON, Nature, xlii, p. 474 [Abstr.].

Miocene: Germany: *Pelecypoda* from the Miocene of Dingden, with many new species; LEHMANN, Verh. Ver. Rheinl. xlix, pp. 198–241, 1 pl.—Austro-Hungary: Sarmatic-miocene shells of Oststeiermark; HILBER, MT. Ver. Steierm. xxviii, pp. 235–248, 1 pl.—Pontic fauna of Southern Hungary, with *Cardium semseyi*, n. sp.; HALAVÁTS, MT. Ung. geol. Anst. x, No. 2. —Prepontic fauna of Agram; GORJANOVIĆ-KRAMBERGER, Glasnik Naravosl. Društ. v, 1890, pp. 154–164, 1 pl.—Miocene non-marine *Mollusca* from Samos; STEFANI in 'Samos.' By C. de Stefani, C. J. Forsyth Major and W. Barbey. Lausanne: 1891 (1892), 4to, pp. 76–81, 1 pl.

Oligocene: France: revision of the Oligocene fauna of Étampes (contd.) with *Odontostomia lamberti* and *Truncatella bezanconi*, n. spp.; COSSMANN (87): Fauna of the Oligocene of Narbonne; VIGUIER, Bull. Soc. Béziers, xiv, p. 72.—Germany: Upper Oligocene fossils of the *Mallius* *Brickearths*; GEINITZ, Arch. Ver. Mecklemb. xlii, pp. 65–67, 71 & 72: *Natica geinitzi*, *Calliostoma jetschimi*, *Yoldia beyrichi*, from the Rupelian of Germany; BRETTER (30): Lower Oligocene *Mollusca* of N. Germany, with many new species; KOENEN (211).—Albania: Oligocene *Mollusca*; DREYER, JB. geol. Reichsanst. xlii, pp. 339 & 340.

Eocene: Belgium: Eocene *Pholadida*; VINCENT (420).—France: Eocene *Mollusca* from the environs of Paris, with some new genera and sections and many new species; COSSMANN (85): lists of Eocene fossils collected near Reims on different excursions; Bull. Soc. Reims, i, pp. 62-64, 84 & 85, 91, 94-97.—Germany: new locality for non-marine *Mollusca* from the Vincentinian Eocene; OPPENHEIM & BEYRICH, Z. geol. Ges. xlv, pp. 500-503.—Italy: Lower Tertiary *Mollusca* of the Ligurian littoral; GREGORIO (157).

### 3. SECONDARY.

Secondary fossils from the Balkans, with many new species; VANKOV, Rad. jugoslav. Akad. cxi, pp. 78-102: Secondary fossils from St. Philippe-de-Benguéla, with *Desmoceras cuvervillei*, *Hamites tropicalis* and *Natica gabonensis*, n. spp.; STANISLAS MEUNIER, Le Nat. 1892, pp. 113 & 114, figg.: new genera and new species of *Mollusca* from the Secondary rocks of the Argentine Cordilleras; BEHRENDSEN (15): Secondary fossils from Queensland with *Pseudavicula* and *Maccoyella*, new genera and many new species; JACK & ETHERIDGE (193), pp. 319 & 321, 388 & 389, 445-503, 561-574: *Unio cyrensis*, Tate, and sp. ? from the Mesozoic of South Australia; ETHERIDGE in BROWN, Reports on the Coalbearing area near Leigh's Creek [Govt. Rept.] 1891, pp. 11 & 12; Upper Rognacian of Les Baux, with 3 new species of land shells; NICOLAS (270).

Cretaceous: *Mollusca* from the Cretaceous of Schleswig-Holstein with *Dimyodon boehmi*, n. sp.; STOLLEY, MT. min. Inst. Kiel, i, pp. 229-244: fossils of the Cretaceous of the Venetian Alps with new *Caprinida*; BOEHM, Ber. Ges. Freiburg, vi, pp. 139-148, figg.: Cretaceous *Mollusca* from the S. E. of Spain, with new species of *Mortonicerias*, &c.; NICKLÈS, Annales Hébert, i, pp. 187-202, figg.: Cretaceous forms from Albania; DREGER, JB. geol. Reichsanst. xlii, pp. 337-339: list of Cretaceous fossils from the Podol'ski Govt.; RADKEVICH, Zapiski. Kiev. xi (1891), pp. 82 & 83: *Cypræa* from the Fox Hills Group; CAMPBELL, Naut. vi, p. 50: on the occurrence of *Actinocumax quadratus* and *Belemnitella mucronata*; STROMBECK, Z. geol. Ges. xliii, pp. 919-922.

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Lower Cretaceous: *Ammonites* from S. W. France, with 3 new species; KILIAN (208): Neocomian of Dîmbovicioara, Roumania, with descriptions of Molluscan species, none new; UHLIG, JB. geol. Reichsanst. xli, pp. 216-234: Valanginian *Hoplites* of the group *H. neocomiensis*; LORY (233).

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**Palæozoic Hyolithida** of Bohemia revised, with new genera and new species ; NOVÁK (271).—Check-list of Palæozoic *Mollusca* from Wisconsin, Minnesota, Iowa, Dakota, and Nebraska ; BIERBAUER (20).—



Palæozoic species of the *Platyceras* group; KEYES (206).—11 new species of *Pelecypoda*, 6 new species of *Platyceras*, from the Clinton, Lower Helderberg, Chemung, and Waverly groups of Pennsylvania; SIMPSON (350).—Middle Devonian and Permo-Carboniferous *Mollusca* from Queensland, with *Dellopecten* and *Merismopteria*, n. gg., and many new species; JACK & ETHERIDGE, (193) pp. 69 & 264-296

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† *Aspidoceras bodenbenderi*, n. sp., Tithonian of the Argentine Cordilleras; BEHRENDSEN, Z. geol. Ges. xlv, p. 13, fig.

† *Baculites compressus*, Say, development of shell in coiled stage; BROWN, P. Ac. Philad. 1892, p. 136.

† *Balatonites sondershanus*, n. sp., Muschelkalk near Sonderhausen; PICARD, Z. geol. Ges. xlv, p. 483, figg.

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† *Lytoceras stephanense*, p. 2, *depereti*, p. 4, n. spp., Lower Cretaceous, S.W. of France; KILIAN, Arch. Mus. Lyon, v, No. 3, fig.

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- †*Oppelia bukowski*, p. 450, *stolsmanni*, p. 452, n. spp., Upper Jurassic of Poland ; SIEMIRADZKI, Z. geol. Ges. xlv.
- †*Perisphinctes*: list of species with many new forms from the Upper Jurassic of Poland ; SIEMIRADZKI, Z. geol. Ges. xlv, pp. 455-478.
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- †*Proplanulites teisseyrei*, n. sp., Upper Jurassic of Poland, SIEMIRADZKI, Z. geol. Ges. xlv, p. 480.
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- †*Gonioceras lambii*, n. sp., Trenton Limestone of the Winnipeg Basin, WHITEAVES, Tr. R. Soc. Canada, ix, No. 4, p. 86, fig.
- †*Lituities*: notes on the mouth of ; HOLM, Geol. Fören. Stockholm Förhandl. xiii, pp. 736-774, figg.
- †*L. toruquisti*, p. 742, *discors*, p. 759, *præcurrents*, p. 763, Silurian of Sweden, HOLM, Geol. Fören. Stockholm Förhandl. xiii, figg., n. spp.
- †*Orthoceras semiplanatum*, p. 81, *selkirkense*, *winnipegense*, p. 82, n. spp., Trenton Limestone of the Winnipeg Basin, WHITEAVES, Tr. R. Soc. Canada, ix, 4, figg.
- †*Poterioceras gracile*, n. sp., Trenton Limestone of the Winnipeg Basin, WHITEAVES, Tr. R. Soc. Canada, ix, No. 4, p. 87, fig.
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[PTEROPODA : see OPISTHOBRANCHIATA.]

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- Ann. N. H. ix, figg. ; *E. (Uniplicaria) kendigiana*, Gorée, Senegambia, ROLLE, Nachr. mal. Ges. 1892, p. 50 : n. spp.
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 (37) 1889, figg.
- (*Trochosonites*) *Helix dioryx*, n. sp., South Africa, MELVILL & PONSONBY,  
 Ann. N. H. ix, p. 89, fig.
- Vitrina fuscicolor*, p. 240, *chrysoprasina*, p. 241, n. spp., South Africa,  
 MELVILL & PONSONBY, Ann. N. H. x, figg.
- Vitrinoides*: n. subg. ? of *Limax*; SIMROTH, SB. Ges. Leipzig, xviii,  
 p. 41.
- Xesta micholitsi*, n. sp., Timor Laut Is., MOELLENDORFF, Nachr. mal. Ges.  
 1892, p. 84, fig.
- Zonites tenerrimus*, Bosnia, BRANCSIK, Evkön. Trenchsen Varm. xii, 1890,  
 p. 68; *Z. caroliniensis*, North Carolina, COCKERELL in BINNEY, Bull.  
 Mus. C. Z. xxii, p. 167, fig.; *Z. (Hyalinia) baueri*, Galapagos Is.,  
 DALL, Naut. v, p. 98; *Z. shepardi*, p. 167, *diegoensis*, p. 168, Cali-  
 fornia, HEMPHILL in BINNEY, Bull. Mus. C. Z. xxii, figg.; *Z. brittisi*,  
 Arkansas, PILSBRY, Naut. v, pp. 99: n. spp. [See also *suprà*,  
*Hyalinia*.]

## HELICIDÆ.

New classification of the *Helices* proposed by PILSBRY, P. Ac. Philad., 1892, pp. 387-404.—Supplement to monograph on *Helix*, PILSBRY in TRYON's Manual, 2nd Series, viii, pp. 55-78.

## ARIONIDÆ.

List of British Species ; COLLINGE, Brit. Nat. 1892, p. 178.—Review of the British *Arionidæ* ; COLLINGE, Conch., ii, pp. 56-66 & 76-83 : criticised by COCKERELL, t. c. pp. 84 & 85 : reply ; COLLINGE, t. c. 85 & 86. *Arionidæ* of New Zealand ; SUTER, J. de Conch. 1892, pp. 250-255. *Arion*, *Limax*, and *Helix*, note on the affinities of ; SCHARFF, Conchologist, ii, pp. 14, 83 & 84 : COCKERELL, t. c. pp. 28 & 29. *Arion* : variation of the genus ; COLLINGE, Ann. N. H. ix, pp. 307 & 308 : sensory nervous system ; RETZIUS, Biol. Unterauch. iv, pp. 11-18, fig. *Arion hortensis*, Fér, and *circumscriptus*, Johnst., new vara. ; COLLINGE, Conchologist, ii, pp. 26 & 27. *A. intermedius*, Normand, remarks on colour changes ; GAIN, Conchologist, ii, pp. 55 & 56. *Hesperarion*, n. g. for *Ariolimax niger*, Coop. ; SIMROTH, Mal. Bl. xi, p. 111.

## BULIMIDÆ.

*Bulimus oblongus*, note on ; GUPPY, P. Z. S. 1892, pp. 271 & 272. *B. (Rachis) jouberti*, p. 61, *pachistoma*, p. 62, *elongatulus*, p. 63, E. Cent. Africa, BOURGUIGNAT, (37) 1889, figg. ; *B. (Amphidromus) columellaris*, Timor Laut Is., MOELLENDORFF, Nachr. mal. Ges. 1892, p. 98, fig. ; *B. guentheri*, U. S. of Colombia, SOWERBY, P. Z. S. 1892, p. 296, fig. ; *B. (Mastus) hispalensis*, Spain, WESTERLUND, An. Soc. Esp. xxi, p. 387 : n. spp.

## COCHLOSTYLA GROUP.

*Cochlostyla* : monograph completed ; PILSBRY in TRYON's Manual, 2nd Series, viii : sections *Orthostylus*, *Hypselostyla*, *Eudoxus*, *Phengus*, *Canistrum*, *Prochilus*, and *Chrysallis*. *C. (Corasia) tenimberica*, n. sp., Timor Laut Is., MOELLENDORFF, Nachr. mal. Ges. 1892, p. 97, fig.

## HELICIDÆ s.s.

*Hadra* and *Camaena*, reply to Moellendorff ; PILSBRY, Nachr. mal. Ges. 1892, pp. 69-73. *Helix*, *Arion*, and *Limax*, note on the affinities of ; SCHARFF, Conchologist, ii, pp. 14, 83 & 84 : COCKERELL, t. c. pp. 28 & 29. *Helix* : muscular apparatus of the radula ; LOISEL, xxviii, pp. 566-572, figg. : anatomy of the genital apparatus with notes on the radulae and jaws ; SCHUBERTH, Arch. f. Nat. lviii, pp. 1-65, figg. : morphology of the genital apparatus ; JHERING, Z. wiss. Zool. liv, pp. 386-520, figg. *Panda* : note on the group. PILSBRY, Naut. vi, p. 9, considers it to be a development from the Bulimoid branch instead of the Helicoid stem of *Helicidæ*.



*Plecteulota*, n. subsect. of *Eulota*, type *E. gonistoma*, MOELLENDORFF.

[See *infra*, Palæotropical Oriental Species, p. 61.]

*Sutera*, n. sect. of *Helix*, type *H. ide*, Gray; PILSBRY, Naut. vi, p. 56, and TRYON'S Manual, 2nd Series, viii, p. 69.

*Thalassohelix*, n. sect. of *Helix*, type *H. zelandiæ*; PILSBRY, Naut. vi, p. 56, and TRYON'S Manual, 2nd Series, viii, p. 71.

*Xerophila*: note on some groups of species of; POLLONERA, Boll. Mus. Zool. Tor. vii, No. 128.

(PALÆARCTIC SPECIES.)

*Helix aspersa*: on the repair of the shell; MOYNIER DE VILLEPOIX, Bull. Soc. Z. Fr. xvii, p. 30. *H. aspersa*, Müll., reproduction of dart; STANDEN, Journ. Conch. vii, pp. 33-38. *H. arbustorum*, Müll., note on the periostracum; TYE, Conchologist, ii, pp. 53 & 54. *H. ericetorum*, Müll., and *H. candicans*, Ziegl., at Landsberg-a-W.; KRAUSE, SB. nat. Fr. 1892, p. 141. *H. hortensis* and *nemoralis*, classification of varr.; EYRE, Conchologist, ii, pp. 7-10; MACDONALD, t. c. pp. 27 & 28. *H. pomatia*, var.; GREDLER, Nachr. mal. Ges. 1892, p. 174. *H. (Ægista) platyomphala*, Mlldff, anatomy; PILSBRY, P. Ac. Philad. 1892, p. 214, fig.

*H. (Cressa) giurica*, Giura I. [Grecian Arch.], BËTTGER, Nachr. mal. Ges. 1892, p. 59; *H. osoria*, Bosnia, BRANČIK, Evkôn. Trencsén Varm. xii, 1890, p. 69; *H. secundaria*, p. 136, *serpentes*, *turbinella*, p. 137, *vicinella*, *languescens*, *molina*, p. 138, *sapeca*, *sterilis*, p. 143, *rhinocerotica*, *galera*, p. 144, *subequamulata*, *ingloria*, *vitreoala*, *ternaria*, *anomia*, p. 145, *alveolus*, p. 146, China, HEUDE (186), figg.; *H. (Campylæa) broemmeri*, Klissura Passa, in Acarnania (Greece), KOBELT in ROSSMAESSLER, (322) v, p. 108, fig.; *H. (Xerophila) mentita*, Palermo, p. 2, *ilvatia*, Piedmont, p. 3, *trimetina*, Is. Pianosa, *bulleata*, Tudu Mannu, p. 4, *warnierella*, p. 5, *cliens*, p. 6, *parca*, p. 7, *Fernana*, *arida* (Monter. MS.), Palermo, p. 7, *stossiciana*, Trieste, p. 9, *trina-crina*, Palermo, *nerusia*, Grasse, p. 11, *mendica*, Rapallo, p. 14, *janalis*, Genova, *senensis*, Siena, p. 15, *pistoriana*, Pistoia, *margarita*, Oran, *elusatia*, S. France, p. 16, *bigeronica*, Lourdes, *festas*, Tunis, *roucay-rolis*, Algeria, p. 17 [alleged n. spp.], POLLONERA, Boll. Mus. Zool. Tor. vii, No. 128; *H. (Xerophila) mutua*, *pumila*, *adina*, *horridula*, *embryonata*, (*Macularia*) *leucochila*, Spain [alleged n. spp.], WESTERLUND, Nachr. mal. Ges. 1892, pp. 187-191; *H. (Xerophila) mutua*, p. 385, *pumila*, *horridula*, *embryonata*, p. 386, (*Macularia*) *leucochila*, p. 387, Spain [alleged n. spp.], WESTERLUND, An. Soc. Esp. xxi; *H. (Xerophila) patriarcharum*, Palestine, *clausella*, Spain, *bougou-lensis*, Algeria, p. 28, *mesopotamica*, Syria, *batuensis*, *marconi*, Algeria, *promissa*, Spain, p. 29, *pinguis*, Alexandria, p. 30, *masthorella*, Sicily, *modestissima*, Sardinia, *neptuni*, Italy, p. 31, *euaxes*, Gibraltar, *poichila*, Algeria, *amblia*, Spain, p. 32, *lampra* [= *ericetorum*], Ireland, p. 33, *mezensis*, Egypt, (*Pomatia*) *beilanica*, Syria, (*Cressa*) *medea*, Crete, *hypsa*, Tunis, p. 45, (*Xeroleuca*) *apaturia*, Libya, p. 46 [alleged n. spp.] WESTERLUND, Verh. z.-b. Wien, xlii: n. spp.

## (PALÆOTROPICAL AFRICAN SPECIES.)

- Helix melvillianae*, n. n. for *H. chapmani*, preoce., W. Africa; ANCEY, Brit. Nat. 1892, p. 126.
- H. bellula*, Uganda, MARTENS, SB. nat. Fr. 1892, p. 15; *H. karewia*, Karewia, N. E. Africa, MARTENS, SB. nat. Fr. 1892, p. 175; *H. farquhari*, Port Elizabeth, MELVILL & PONSONBY, Ann. N. H. x, p. 240, fig.; *H. (Pella) trichosteiroma*, *epetrina*, p. 84, *lygæa*, p. 85, *rhysodes*, p. 87, *tuguriolum*, *erateina*, p. 88, *bathycoele*, p. 89, S. Africa, MELVILL & PONSONBY, Ann. N. H. ix, figg.; *H. (Pella) actinotricha*, p. 238, *burnupi*, *conisalea*, p. 239, *minythodes*, p. 240, S. Africa, MELVILL & PONSONBY, Ann. N. H. x, figg. : n. spp.

## (PALÆOTROPICAL ORIENTAL SPECIES.)

- H. (Plectopylis) fultoni*, Khasi Hills?, Assam, GODWIN-AUSTEN, Ann. N. H. 1892, p. 300; *H. (Eulota) hemisphaerica*, p. 90, *tenimberica*, *bitaeniata*, p. 91, fig. 1, *(Plecteulota) goniostoma*, p. 92, fig., *telitecta*, p. 93, fig., Timor Laut Is., MOELLENDORFF, Nachr. mal. Ges. 1892; *H. (Chloritis) rhodochila*, *micholitzii*, *tenuitesta*, Timor Laut Is., MOELLENDORFF, Nach. mal. Ges. 1892, pp. 95 & 96, figg.; *H. (Plectotropis) hyperteleia*, Laos, p. 82, *(Phania) dugasti*, Tonkin, p. 83, MORLET, J. de Conch. 1892; *H. (Chloritis) remoratrix*, Laos, MORLET, J. de Conch. 1892, p. 317, fig.; *H. supracostulata*, Soemba, SCHEPMAN, Notes Leyd. Mus. xiv, p. 150, fig. : n. spp.

## (AUSTRALIAN AND POLYNESIAN SPECIES.)

- Helix (Chloritis) leei*, Cox, *chloritoides*, Pilsbry, jaws and radulæ, with genitalia of *leei*; HEDLEY, P. Linn. Soc. N.S.W. vi, pp. 687 & 688, figg. *H. (Cristigibba) macgregori*, Hedley, jaw and radula; HEDLEY, P. Linn. Soc. N.S.W. vi, p. 687, figg. *H. (Geotrochus) brumeriensis*, Forbes, *lousiadensis*, Forbes, *rollsianus*, Smith, *woodlarkianus*, Souv., *trobriandensis*, Hedley, *boyeri*, Fisch. & Bern., jaws, radula, and genitalia; HEDLEY, P. Linn. Soc. N.S.W. vi, pp. 689-691, figg. *H. (Hadra) gulosa*, Gould, synonymy of; BRAZIER, P. Linn. Soc. N.S.W. vi, pp. 321-328. *H. (Hadra) broadbenti*, Brazier, jaw, radula, and genitalia; HEDLEY, P. Linn. Soc. N.S.W. vi, p. 688, figg. *H. (Panda) atomata*, Gray, note on structure and affinities; HEDLEY, Rec. Austral. Mus. ii, pp. 26-31, 3 pls.
- H. (Hadra) everardensis*, *elderi*, Elder River, Central Australia; BENNALL, Tr. B. Soc. S. Austr. xvi, pp. 64 & 65, figg.; *H. (Hadra) owarensis*, p. 565, *derbyi*, p. 566, Solomon Is., Cox, P. Linn. Soc. N.S.W. vi, figg.; *H. aggiei*, Solomon Is., HEIMBURG, Mal. Bl. xi, p. 158, figg.; *H. (Geotrochus) hedleyi*, New Guinea?, SMITH, Journ. Conch. vii, p. 72; *H. (Planispira) halmaherica*, p. 44, *(Geotrochus) chondrodes*, p. 45, *(Albersia) pseudocorasia*, p. 47, Halmahera [Moluccas], STRUBELL, Nachr. mal. Ges. 1892; *H. (Amphidora) oliracea*, Auckland, SUTER, Tr. N. Z. Inst. xxiv, p. 290, fig. : n. spp.

## (NEOTROPICAL SPECIES.)

- H. (Caracolus) rostratus, acutus*, anatomy; PILSBRY, P. Ac. Philad. 1892, pp. 128 & 129, fig. *H. (C.) orbiculata*, Fér., anatomy; PILSBRY, P. Ac. Philad. 1892, p. 214, fig. *H. (Cysticopsis) tenerrima*, C. B. Ad., anatomy; PILSBRY, P. Ac. Philad. 1892, p. 214, fig. *H. (Hemitrochus) salvatoris*, anatomy; PILSBRY, P. Ac. Philad. 1892, p. 129, fig. *H. (Sagda) similis*, C. B. Ad., anatomy; PILSBRY, P. Ac. Philad. 1892, p. 213, fig.
- H. creveauxiana*, W. Columbia, ANCEY, Bull. Soc. Mal. Fr. vii, 1891, p. 152; *H. (Systrophia) alcidiana*, Brazil, ANCEY, Journ. Conch. vii, p. 91; *H. (Lucerna) vendryesi*, Jamaica, COCKERELL, J. Inst. Jamaica, i, p. 55 [nom. preocc. and sp. not new, = *H. sloaneana*, Shuttlew. var.]; *H. altispira*, Honduras, MARTENS, Biol. Centr. Am. Moll. p. 156, fig.; *H. (Polygyra) dissecta*, p. 167, *richardsoni*, p. 168, Mexico, MARTENS, Biol. Centr. Am. Moll. figs.; *H. sieversi*, New Granada, MARTENS, Conch. Mittheil. iii, 1889, p. 7, fig. : n. spp.

## (NEARCTIC SPECIES.)

- [*Helix*] *Vallonia*: notes on N. American forms; STERKI, Naut. v, pp. 100 & 101. *H. (Mesodon) andrewsi* in Missouri; SAMPSON, Naut. vi, p. 90.
- H. sargenti*, n. sp., Woodville, Alabama, JOHNSON & PILSBRY, Naut. vi, p. 8.

## (FOSSIL FORMS.)

- Grandipatula*, n. sect. of *Helix*, type †*H. hemisphærica*, Mich.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv, 1889, p. 354.
- Sagdellina*, n. sect. of *Helix*, type †*H. chevallieri*, COSSM.; Cat. Coqu. Foss. Eocene Paris, iv, 1889, p. 353.

## (PHENACOHÉLICIDÆ.)

Under *Phenacoheliciidæ*, SUTER (Tr. N. Z. Inst. xxiv, p. 271) includes the following genera of New Zealand heliciform *Mollusca*:—*Phacussa*, *Thalassia*, *Gerontia*, *Psyra*, *Pyrrha*, *Therasia*, *Phenacohelix*, *Patulopsis* [nom. nov. for *Charopa*, Hutton], *Amphidoza*, and *Calymna*. The family is characterized as animal heliciform, possessing a caudal gland; jaw ribbed, stegognath; teeth of radula show all intermediate forms, from aculeate to quadrate; shell, that of *Helix*, flat or elevated, umbilicated or imperforate; peristome acute, aperture without lamellæ; periostracum smooth or ribbed, seldom hairy. *Phacussa* stands nearest to *Limacidae*, *Amphidoza* and *Calymna* to *Patulidae*. [PILSBRY, P. Ac. Philad. 1892, pp. 401 & 402, includes this group in the genus *Endodonta*, as restricted by him.]

## PATULA GROUP.

- Aeschrodomus*, n. n. for *Thera* (sect. of *Patula*); PILSBRY, Naut. vi, p. 55, note.
- Charopa* and allied forms: notes on; PILSBRY, Naut. vi, pp. 67-69.
- Charopids* are not *Helicids*, but should form a subfamily of *Zonitidae*; 4 species are redescribed and figured; HEDLEY, P. Linn. Soc. N.S.W. vii, pp. 157-169.
- Diaglyptus*, n. sect., type *P. pagodiformis*, Smith (= *P. bilamellata*, Pfr.); PILSBRY in TRYON (410) p. 86.
- Endodonta leimonias*, Gray, *psocilestica*, Pfr., are removed to *Phrizgnathus* (*Luoma*); SUTER, Tr. N. Z. Inst. xxiv, p. 271.
- Helenoconcha*, n. sect., type *P. bilamellata*, Sow.; PILSBRY in TRYON (410) p. 91.
- Patula*: Supplement to monograph; PILSBRY in TRYON (410). *P. strigosa*, Gould, in Arizona; STEARNS, Naut. vi, p. 1.
- P. (Discus) brunnescens*, Timor Laut Is., MOELLENDORFF, Nachr. mal. Ges. 1892, p. 87; *P. (Microphysa) intonsa*, Mexico, PILSBRY in TRYON (410) p. 111, figg.; *P. persoluta, latissima*, p. 261, *vermoni, pseustes*, p. 262, *minutissima, leptalea*, p. 264, St. Helena, SMITH, P. Z. S. 1892, figg.; [*P.*] *Helix chaperi*, Switzerland, WESTERLUND, Verh. z.-b. Wien, xlii, p. 27: n. spp.
- Phrizgnathus transitans*, New Zealand; SUTER, Tr. N. Z. Inst. xxiv, p. 297, fig.
- Pitys*: notes on; SUTER, J. de Conch. 1892, pp. 245-248.
- Ptychodon magdalenae*, n. sp., New Zealand, ANCEY, Brit. Nat. 1891, p. 65.
- Trochomorpha fritzei*, n. sp., Middle Liu-Kiu Is., BÆTTGER, Nachr. mal. Ges. 1892, p. 160.

## BULIMULIDÆ.

- Amphidromus latestrigatus*, p. 151, Soemba, *reflexilabris*, p. 152, Timor, SCHEPMAN, Notes Leyd. Mus. xiv, figg., n. spp.
- Bulimulus germaini*, Brazil, ANCEY, Journ. Conch. vii, p. 92; *B. (Placostylus) hobsoni*, Solomon Is., COX, P. Linn. Soc. N.S.W. vi, p. 567, figg.; *B. chaperi*, Mexico, CROSSE & FISCHER, J. de Conch. 1892, p. 296; *B. (Naesiotus) invalidus, venustus*, p. 17, *pallidus*, p. 18, *cinereus, ventrosus*, p. 19, *acutus*, p. 20, *curtus, nudus*, p. 21, *wolffi*, p. 22, *simrothi*, p. 23, (*Pleuropyrgus*) *terebra*, p. 24, *lina* (*Pelecostoma*, n. sect.), *canaliferus*, p. 25, *cymatoferus*, p. 26, Galapagos Is., REIBISCH, SB. Ges. Isis, 1892, figg.; *B. subtruncatus, turtoni*, St. Helena, SMITH, P. Z. S. 1892, p. 266, figg.; *B. koppeli, da-costa, glandiniformis*, Bogota, SOWERBY, P. Z. S. 1892, p. 297, figg.; *B. (Pleuropyrgus) habeli*, Galapagos Is., STEARNS, Naut. vi, p. 86 (& v, pp. 98 & 99): n. spp.
- Diplomorpha coxi*, n. sp., New Hebrides, HARTMAN, P. Linn. Soc. N.S.W. vi, p. 571, fig.
- Partula*: catalogue of the genus begun by HARTMAN, Naut. vi, pp. 73-76.
- Pelecostoma*, n. sect. of *Bulimulus* [*q.v.*].

## BULIMINIDÆ and PUPIDÆ.

- Pupidæ* of North America [= U. S.] ; STERKI, Naut. vi, pp. 2-8.
- Balea*, viviparous nature of ; ROGERS, Journ. Conch. vii, p. 40.
- Buliminidius larvatus, pupatus*, n. spp., China, HEUDE (186) p. 146, figg.
- Buliminopsis quaternarius, conoidius*, n. spp., China, HEUDE, (186) p. 147, figg.
- Bulim*[in]us *lourdeli*, p. 51, *bridouzi*, p. 53, Usagara, BOURGUIGNAT, (37) 1889, figg.; *Buliminus aureus*, p. 148, *meronianus, meleagrinus*, p. 149, *guilcherianus, vidianus, antiseccalinus, amedeanus, loliaceus*, p. 150, China, HEUDE (186), figg.; *B. trapezoideus*, Mt. Runso, N. E. Africa, MARTENS, SB. nat. Fr. 1892, p. 176 ; *B. layardi*, Kobis (Becuanaland), *quisqualis*, Moçambie (Angola), *lamoensis*, Lamo, E. Africa, MELVILL & PONSONBY, Ann. N. H. ix, p. 90, figg.; *B. (Amphiscopus) continens*, Transcaspia, ROSEN, Nachr. mal. Ges. 1892, p. 125 ; *B. (Mastus) hispalensis*, Spain, WESTERLUND, Nachr. mal. Ges. 1892, p. 192 ; *B. (Napaeus) djurdjurenensis*, Algeria, (*Chondrulus*) *montandoni*, Dobrudscha, *movradi*, Asia Minor, p. 35, *granulatus*, Samaria, p. 36, *ponsonbyi*, Lycia, p. 47, (*Mastus*) *mestus*, Sofrano Is., p. 46, WESTERLUND, Verh. z.-b. Wien, xlii : n. spp.
- Clausilia (Nenia) orbigny*, Bolivia, ANCEY, Brit. Nat. 1892, p. 126, Le Nat. 1892, p. 178, figured in Journ. Conch. vii, p. 97 ; *C. (Albinaria) broemmi*, Chelmos, near Kalavryta (Greece), BÖTTGER, Nachr. mal. Ges. 1892, p. 64 ; *C. (Delima) optabilis*, Bosnia, BRANCSIK, Evkôn. Trencsen Varm. xii (1890) p. 73 ; *C. (Papillifera) melitensis*, Matta, CARUANA-GATTO, Med. Nat. i, p. 148 ; *C. retorta*, p. 153, *friniana*, p. 160, *loloensis*, p. 161, China, HEUDE (186), figg.; *C. (Phædusa ?) massiei*, Laos, MORLET, J. de Conch. 1892, p. 83 ; *C. paviei*, p. 319, *dautzenbergi*, p. 320, Laos, MORLET, Journ. Conch. 1892, figg.; *C. magistra*, Bogota, SOWERBY, P. Z. S. 1892, p. 298, fig. ; *C. (Alopiu) deubeli*, Siebenburgen, p. 38, (*Delima*) *calabacensis*, Greece, p. 39, (*Cristataria*) *calopleura*, Syria, (*Cusmicia*) *vestigans*, Carniolian Alps, p. 41, WESTERLUND, Verh. z.-b. Wien, xlii : n. spp.
- Coeliazis australis* is generically distinct from the type *C. layardi*, and is referable to *Perrieria*, Tap.-Can. *C. exigua*, Adams, is a syn. of *C. australis*, and is not a Solomon Is. species ; HEDLEY, P. Linn. Soc. N.S.W. vii, pp. 311-313.
- Eucalodium compactum*, n. sp., Tabasco, Mexico, PILSBRY, P. Ac. Philad. 1892, p. 338, fig.
- Holospira* : notes on the genus and its distribution ; CROSSE & FISCHER, J. de Conch. 1892, pp. 256-279, 1 pl.
- Odontostomus lemoinei*, n. sp., Bolivia, ANCEY, Le Nat. 1892, p. 178, and Journ. Conch. vii, p. 93, fig.
- Paraknodus leroyi*, p. 65, *sesamorum*, p. 66, n. spp., E. Centr. Africa, BOURGUIGNAT, (37) 1889, figg.
- Perrieria* : notes on the genus ; HEDLEY, P. Linn. Soc. N.S.W. vii, pp. 311-313.

- Pupa monadicula*, China, HEUDE, (186) p. 152, fig. *P. ringens*, in Guernsey; MARQUAND, J. Conch. vii, p. 44. *P. coloradensis* and *ingersolli*; for notes purporting to be descriptions of these nom. nud., see COCKERELL, Brit. Nat. 1891, pp. 100 & 101.
- P. acanthinula*, p. 709, *lyonsiana*, p. 713, *magdulena*, p. 716, Sandwich Is., ANCEY, Mém. Soc. Zool. v; *P. anodonta*, Queensland, HEDLEY & MUSSON, P. Linn. Soc. N.S.W. vi, p. 558, fig.; *P. elizabethensis*, Port Elizabeth, *ovampoensis*, Ovampoland (Damaraland), MELVILL & PONSONBY, Ann. N. H. ix, p. 91, fig.; *P. (Leucochila) munita*, *clausa*, Galapagos Is., REIBISCH, SB. Ges. Isis, 1892, p. 27, fig.; *P. turtoni*, *obliquicostata*, St. Helena, SMITH, P. Z. S. 1892, p. 268, figg.; *P. (Torquilla) retracta*, Spain, WESTERLUND, An. Soc. Esp. xxi, p. 388; *P. (T.) refuga*, *homala*, Sicily, p. 192, *retracta*, Spain, p. 194, (*Pupilla*) *honesta*, Italy, p. 194, WESTERLUND, Nachr. mal. Ges. 1892; *P. (Torquilla) domicella*, Lourdes, *hetaera*, Pyrénées Orientales, p. 36, *occidentalis*, Hautes-Pyrénées, *migma*, Pyrénées Orientales, *appelliusi*, Dalmatia, p. 37, WESTERLUND, Verh. z.-b. Wien, xlii: n. spp.
- Ruchisellus burtoi*, p. 69, *ledoulzi*, p. 70, n. spp., E. Centr. Africa, BOURGUIGNAT, (37) 1889, figg.
- Tomigerus* (?) *perezilis*, n. sp., St. Helena, SMITH, P. Z. S. 1892, p. 267, fig.

## STENOGYRIDÆ.

- Achatina bloyeti*, p. 82, *arctespirata*, p. 83, *randabeli*, p. 84, E. Centr. Africa, BOURGUIGNAT, (37) 1889, figg.; *A. (Burtoa) bridouxiana*, p. 92, *sebasmia*, p. 93, *pethericki*, p. 95, *lavigeriana*, p. 96, E. Centr. Africa, BOURGUIGNAT, (37) 1889, figg.; *A. (Burtopsis) jouberti*, E. Centr. Africa, BOURGUIGNAT, (37) 1889, p. 99, fig.; *A. (Limicolaria) charbonnieri*, p. 104, *megalæa*, p. 105, *coulboisi*, p. 106, *dromauxi*, p. 107, *sepulcralis*, p. 108, *lamellosa*, p. 109, E. Centr. Africa, BOURGUIGNAT, (37) 1889, figg.; *A. (Serpæa) pintoï*, E. Centr. Africa, BOURGUIGNAT, (37) 1889, p. 86, fig.: [alleged n. spp.]. *A. (Perideris) lechatelieri*, Dahomey, DAUTZENBERG, J. de Conch. 1892, p. 297; *A. stuhlmanni*, Ituri, N. E. Africa, MARTENS, SB. nat. Fr. 1892, p. 176; (*Homorus*) *pyramidella*, Cameroons, MARTENS, SB. nat. Fr. 1892, p. 181; *A. dimidiata* [preocc., SMITH, 1878], Gaboon, MARTENS, Conch. Mittheil. iii, 1889, p. 17, fig.: n. spp. [See also *infra*, *Stenogyra*.]
- [*Cæcilianella*] *Achatina acicula*, in a Roman cemetery; SOMERVILLE, Journ. Conch. vii, pp. 42 & 43.
- Cæcilianella baldwini*, Sandwich Is., ANCEY, Mém. Soc. Zool. v, p. 718; *C. gattoi*, *melitensis*, *pollonera*, Malta, WESTERLUND in CARUANA-GATTO, Med. Nat. ii, p. 227: [alleged n. spp.].
- Cionella ovampoensis*, Ovampoland (Damaraland), MELVILL & PONSONBY, Ann. N. H. ix, p. 91, fig.; *C. (Ferussacia) virginea*, p. 195, Spain, (*Cæcilianella*) *gattoi*, p. 195, *melitensis*, *pollonera*, p. 196, Malta, 1892. [VOL. XXIX.]

- WESTERLUND, Nachr. mal. Ges. 1892; *C. (Ferussacia) extrema*, Marocco, *stenophya*, *bourlieri*, Algeria, (*Hohenwarthia*) *disparata*, Barcelona, p. 43, WESTERLUND, Verh. z. b. Wien, xlii: *C. (Ferussacia) virginea*, Spain, WESTERLUND, An. Soc. Esp. xxi, p. 388: n. spp.
- Cryptazeca monodonta*, anatomy; BARROIS, Rev. Sci. Nat. Ouest, ii, pp. 330 & 331: figg.
- Glessula paviei*, n. sp., Indo-China, MORLET, J. de Conch. 1892, p. 321, fig.
- Leptinaria chathamensis*, n. sp., Galapagos Is., DALL, Naut. v, p. 98.
- Pseudoglessula*, n. sect. of *Stenogyra*, for *P. heteracra*, *subcrenata*, W. Africa, n. spp.; BETTGER, Nachr. mal. Ges. 1892, p. 202.
- Subulina cylindracea*, *jouberti*, E. Centr. Africa, BOURGUIGNAT, (37) 1889, p. 115, figg.; *S. paucispira*, Karewia, N. E. Africa, MARTENS, SB. nat. Fr. 1892, p. 177: n. spp.
- Stenogyra*. [See *Pseudoglessula*, n. sect.]
- Stenogyra* [or rather *Achatina*] *leroyi*, p. 110, *grandidieriana*, p. 111, E. Cent. Africa, BOURGUIGNAT, (37) 1889, figg.; *S. palus*, China, HEUDE (186) p. 151, fig.; *S. badia*, Congo, MARTENS, Conch. Mittheil. iii, 1889, p. 8, fig.; *S. cacuminata*, p. 85, South Africa, *chapmani*, p. 90, Ovampoland (Damaraland), MELVILL & PONSONBY, Ann. N. H. ix, fig.: n. spp.
- Zua sinensis*, n. sp., China; HEUDE (186), p. 151, fig.

### HELICTERIDÆ and SUCCINEIDÆ.

- Amastra frosti*, n. sp., Sandwich Is.; ANCEY, Mém. Soc. Zool. v, p. 719.
- Curelia sinclairi*, n. sp., Sandwich Is.; ANCEY, Mém. Soc. Zool. v, p. 720.
- Succinea*: living in dry localities; LOENS, Nachr. mal. Ges. 1892, pp. 130 & 131. *S. simplex*, Pfeiff., jaw and radula; HEDLEY, P. Linn. Soc. N.S.W. vi, p. 691, figg.
- S. (Brachyspira) decussata*, Timor Laut Is., MOELLENDORFF, Nachr. mal. Ges. 1892, p. 99; *S. wolfi*, Galapagos Is., REIBISCH, SB. Ges. Isis, 1892, p. 28, fig.: n. spp.

### VAGINULIDÆ and ONCIDIIDÆ.

- Notes on the *Vaginulidæ*; SIMROTH, Verh. Deutsch. Zool. Ges. i (1891), pp. 58-60.
- Atopos*, Simr.; notes on; JHERING, Nachr. mal. Ges. 1892, pp. 140-144: [with reply by SIMROTH, t. c. pp. 144-149]. *Atopos*, description of; SIMROTH, SB. Ges. Leipzig, xviii, p. 25. [Ab. of previous paper in Zool. Rec. 1891, *Moll.* p. 26, No. 400.]
- Prisma*, n. sect. for *Vaginula tourannensis*, Soult., *prismatica*, Tapp.-Canef., and *heyneimanni*, nom. nud.; SIMROTH, Z. wiss. Zool. lii, p. 596, fig.
- Vaginula carusi*, Singapore, *chavesin*, Miudanao, *sarasinorum*, Candy, *bocagei*, Moluccas, &c., *strubelli*, *newtoni*, *platei*, *marshalli*, Java,

- sumatrensis*, Sumatra, *graffi*, Celebes, *viripara*, Saleijer Is., *weberi*, Sumatra, *cockerelli*, Java, *chilensis*, Chili, *jordani*, *paraguensis*, *taylori*, Paraguay, SIMROTH, SB. Ges. Leipzig, xviii, names given, pp. 85 & 86, descriptions, pp. 65-73, n. spp.
- Veronicella jamaicensis*, n. n. for *V. kraussii*, Fér., of Semper, p. 55, *V. virgata*, p. 96, *dissimilis*, p. 134, COCKERELL, J. Inst. Jamaica, i : alleged n. spp.
- Oncidiidæ*: on the structure and relationship of the ; PLATE, Verh. Deutsch. Zool. Ges. ii, pp. 30-42.
- Onchidium leslei*, n. sp., Galapagos Is., STEARNS, Naut. vi, p. 87.

## BASOMMATOPHORA.

## AURICULIDÆ.

- Alexia myosotis*, Drap., in Is. of Borkum [first record for Germany] ; SCHNEIDER, Nachr. mal. Ges. 1892, p. 116.
- A. armoricana*, n. sp. [?], W. Coast of France ; LOCARD, Échange, vii, 1891, p. 132.
- Anelasma*, n. sect. of *Traliopsis*, type † *T. lemoinei*, n. sp., COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv, 1889, p. 343 : [altered to *Micrelasma*, HARRIS & BURROW, 1891].
- Semiauricula*, n. sect. of *Auricula*, type † *A. adversa*, Desh. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv, 1889, p. 341.
- Tralia* (*Alexia* ?) *minuscula*, Florida ; DALL in SIMPSON, P. Davenport Ac. v, 1889, p. 69.

## LIMNÆIDÆ and PHYSIDÆ.

- Anrylus* in New Zealand ; SUTER, J. de Conch. 1892, pp. 248-250.
- A. obliquus*, n. sp., Lincoln, Iowa, SHIMEK, Bull. Lab. Iowa, i, p. 214, fig.
- Latia lateralis*, Gould, phosphorescence in ; SUTER, Mal. Bl. xi, p. 105.
- Limnæa limosina*, *conglobata*, *putriformis*, *læta*, *oppressa*, pp. 18 & 19, *strangulata*, p. 78, alleged new French species ; LOCARD, Échange, viii.
- L. nyanzae*, Victoria Nyanza, MARTENS, SB. nat. Fr. 1892, p. 16, n. sp.
- Physa heterostrophu*, Say, notes on ; CRANDALL, Naut. vi, p. 20 : fertility of ; POTEAT ; J. Elisha Mitchell Sci. Soc. viii, pp. 70-73.
- P. trigona*, Victoria Nyanza, MARTENS, SB. nat. Fr. 1892, p. 17 ; *P. (Bulinus) clathrata*, Spain, WESTERLUND, Nachr. mal. Ges. 1892, p. 197 ; *P. (Bulinus) clathrata*, Spain, WESTERLUND, An. Soc. Esp. xxi, p. 388 : n. spp.
- Physopsis bloyeti*, n. sp., E. Cent. Africa ; BOURGUIGNAT, (37) 1889, p. 160, fig.
- Planorbis riparius*, West., added to Brit. Fauna, from Lough Swilly ; MILNE, Irish Nat. 1892, p. 192. [Subsequently withdrawn, = *P. nautileus*.]



*P. (Segmentina) emicana*, S. Africa, MELVILL & PONSONBY, Ann. N. H. x, p. 241, fig.; *P. victorica*, Victoria Nyanza, SMITH, Ann. N. H. 1892, p. 383; † *P. borellii*, *verticellus*, p. 126, *sabljari*, p. 127, *ptycophorus*, *lazici*, p. 128, *marinkovici*, p. 129, Tertiary of Markuševac (Croatia), BRUSINA, Glasnik Naravosl. Društ. vii : n. spp.

#### SIPHONARIIDÆ and AMPHIBOLIDÆ.

*Amphibola* : anatomy ; BOUVIER, Bull. Soc. Philom. iv, pp. 146-153.  
*Siphonaria* is an Opisthobranch ; HALLER, Arb. z. Inst. Wien, x, pp. 71-100, figg., and should be placed next *Umbrella*.  
*S. gigas*, Less., anatomy, with figures ; HALLER, Arb. z. Inst. Wien, x, pp. 71-100.

#### OPISTHOBRANCHIATA.

Vision in *Opisthobranchiata* ; WILLEM, Arch. Biol. xii, pp. 123-149, figg.  
 On the anal eye of the larvæ of Opisthobranchs ; MAZZARELLI, Rend. R. Ac. Lincei, 1892, i, p. 103.  
*Opisthobranchs* obtained on the voyages of the 'Hirondelle' ; BERGH (18).

#### NUDIBRANCHIATA.

Synopsis of families and classification ; BERGH (17).—Organisation and phylogeny of the *Nudibranchiata* ; PELSENER, Bull. Soc. Mal. Belg. 1891 [1893], pp. lxxiii-lxxi.—*Nudibranchiata holohepatica porostomata*, synopsis ; BERGH, Verh. z.-b. Wien, xlii (Abh.) pp. 1-16.—*Nudibranchiata sacoglossa*, are hermaphrodite ; PELSENER, Bull. Soc. Mal. Belg. 1891 [1893], p. lv.—Innervation of the cerata of some *Nudibranchiata* ; HERDMAN & CLUBB, Q. J. Micr. Sci. xxxiii, pp. 541-558, figg.—Notes on the *Nudibranchiata* found at Puffin L ; HERDMAN, Tr. Liverp. Biol. Soc. v (1891) pp. 31-34.

#### ANTHOBRANCHIATA.

*Euplocamus atlanticus*, n. sp., Azores, BERGH, (18) p. 12, fig.  
*Jorunna johnstoni*, notes on structure and habits ; GARSTANG, Conchologist, ii, pp. 49-52.

#### INFEROBRANCHIATA.

*Pleuroleura walleri*, n. sp., Spitsbergen, KRAUSE, Zool. JB. vi, Syst. p. 366, figg.  
*Pleurophyllidia loveni*, Bergh, in Britain ; M'INTOSH, Conchologist, ii, p. 21 : addition occurrence ; HERDMAN, t. c. p. 52 ; GREISBACH, t. c. p. 72.

## POLYBRANCHIATA.

- Cratena fructuosa*, n. sp., Saragossa Sea, BERGH, (18) p. 4, fig.  
*Eolidida*, remarks on some means of defence amongst the ; HECHT, C.R. cxv, pp. 746-748.  
*Glaucus atlanticus*, Forster, note on specimens washed ashore on the coast of New South Wales; HEDLEY, P. Linn. Soc. N.S.W. vi, p. 576.  
*Hancockia eudactylota*, Gosse, observations on ; GAMBLE, Ann. N. H. ix, pp. 378-385, figg.  
*Lomanotus genei*, Verany, observations on ; GAMBLE, Ann. N. H. ix, pp. 378-385, figg.

## TECTIBRANCHIATA.

## (REPTANTIA.)

## ACTÆONIDÆ.

- Actæon delicatus*, E. Coast U. S., DALL, Bull. Mus. C. Z. xviii (1889), p. 41, fig. ; *A. monterosatoi*, Azores, DAUTZENBERG, (107) 1889, p. 20, figs. : n. spp.  
*Bulmactæon*, n. sect. for †*Actæon bernayi*, n. sp., COSSMANN, Mem. Soc. Mal. Belg. 1891 (1892) p. 76.  
*Crenilabium*, n. sect. of *Actæon*, type †*A. aciculatus*, n. sp., COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 302.  
*Leucotina elongata*, n. sp., Port Elizabeth, SOWERBY, (378) p. 52, fig.  
*Ovulactæon*, n. g., for *O. meekii*, n. sp., Caribbean ; DALL, Bull. Mus. C. Z. xviii (1889), pp. 42 & 43, fig.  
*Semiactæon*, n. sect. of *Actæon*, type †*Tornatella sphaericula*, Desh. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 304.

## TORNATINIDÆ and SCAPHANDRIDÆ.

- Acrotrema*, n. sect. of *Cylichna*, type †*Bulla cylindroides*, Desh. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 313.  
*Cylichna verrillii*, Coast of N. Carolina, DALL, Bull. Mus. C. Z. xviii (1889), p. 54 ; *C. richardi, chevreuzi*, Azores, DAUTZENBERG, (107) 1889, p. 23, figg. : n. spp.  
*Tornatina mariei*, p. 21, *protracta*, p. 22, Azores, DAUTZENBERG (107) 1889, figg. ; *T. (Coleophysis) perplicatus*, Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), p. 45 : n. spp.  
*Utriculus (vortex var. ?) domitus*, n. sp., Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), p. 47, fig.  
*Volvula bushii, aspinosa*, n. spp., E. Coast U. S., DALL, Bull. Mus. C. Z. xviii (1889), p. 51.

## BULLIDÆ, RINGICULIDÆ, GASTROPTERIDÆ, and PHYLINIDÆ.

- Bulla krebssii*, Guadelupe, p. 56, *clausa*, Florida, p. 57, DALL, Bull. Mus. C. Z. xviii (1889) ; *B. guernei*, Azores, DAUTZENBERG, (107) 1889, p. 24, figg. : n. spp.

- Gasteropteron meckelii*, KOSSE, notes on ; SMITH, P. N. H. Soc. Glasg. iii, p. 258.  
 †*Gilbertia* : notes on ; VINCENT, Bull. Soc. Mal. Belg. 1891 [1893] p. lii; COSSMANN, t. c. p. lxiv.  
*Philine infundibulum*, p. 57, *planata*, p. 58, n. spp., E. Coast U. S., and Caribbean, DALL, Bull. Mus. C. Z. xviii (1889).

#### PLEUROBRANCHIDÆ and UMBRELLIDÆ.

- Pleurobranchillus*, n. g., p. 27, with *P. morosus*, n. sp., p. 28, Atlantic ; BERGH, (18) fig.  
*Umbraculum (Hyalopatina) rushii*, n. sp., Bahamas, DALL, Bull. Mus. C. Z. xviii (1889), p. 61.

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*Siphonaria* is placed amongst *Opiathobranchiata*, next to *Umbrella*, by HALLER, Arb. z. Inst. Wien, x, pp. 71-100.

#### (NATANTIA or PTEROPODA.)

- Muscular system of *Pteropoda* ; WACKWITZ, Zool. Beitr. iii, p. 129.—Notes on the embryology of the *Pteropoda*, Rev. Sci. Nat. St. Pétersb. 1891, p. 148 [Russian].—Catalogue of the *Pteropoda* of Australia and Tasmania ; BRAZIER (44).  
 †*Conularia baini*, n. sp., Palæozoic of Bolivia, ULRICH, (412) p. 36, fig. *Hyolithidæ* : Palæozoic *Hyolithidæ* of Bohemia revised ; NOVÁK, Abb. Böhm. Ges. iv, No. 6, with *Ceratotheca*, n. g., type *Hyolithes aduncus*, Barr., and 4 new species. *Bactrotheca*, n. g. for *B. deleta*, n. sp., and *Hyolithes teres*, Barr. *Pterygotheca*, n. g. for *P. barraudei*, n. sp., and *Orthotheca*, n. g. & spp.  
 †*Hyolithes schencki*, n. sp., Palæozoic, Bolivia, ULRICH, (412) p. 37, fig.

[NUCLEOBRANCHIATA : see PROSOBRANCHIATA.]

#### PROSOBRANCHIATA.

- Vision in the *Prosobranchiata* ; WILLEM, Arch. Biol. xii, pp. 123-149, figg.—Observations on the nephridia ; ERLANGER, Q. J. Micr. Sci. xxxiii, pp. 587-623, figg.

#### NUCLEOBRANCHIATA.

- The *Heteropoda* are streptoneurous and are simply Prosobranchs whose exterior aspect has become modified by pelagic life ; PELSENER, C.B. cxiv, pp. 775-777.—Muscular system of *Heteropoda* ; WACKWITZ, Zool. Beitr. iii, p. 129.

## PECTINIBRANCHIATA.

## TOXOGLOSSA.

## TEREBRIDÆ and CONIDÆ.

- Hemiconus*, n. sect. of *Conus*, type †*C. stromboides*, Lamk. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 230.  
*Terebra* (*Acus*?) *benthalis*, p. 65, Havana, *nassula*, *limatula*, p. 66, n. spp., Caribbean, DALL, Bull. Mus. C. Z. xviii (1889).

## PLEUROTOMIDÆ.

- Apiotoma*, n. sect. of *Pleurotoma*, type †*P. pirulata*, Desh. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 259.  
*Bela grimaldi*, n. sp., Azores, DAUTZENBERG, (107) 1889, p. 26, figg.  
*Borsonia* (*Cordieria*) *rouaultii*, n. sp., Barbadoes, DALL, Bull. Mus. C. Z. xviii (1889), p. 98, fig.  
*Clathurella watsoni*, Azores, DAUTZENBERG, (107) 1889, p. 29, figg.; *O. bourguignati*, *servaini* [? new], W. Coast France, LOCARD, Échange, vii (1891), pp. 5 & 6 : n. spp.  
*Defrancia ponsonbyi*, n. sp., Port Elizabeth, SOWERBY, (378) p. 7, fig.  
*Drillia tryonii*, *albicoma*, Caribbean, p. 83, *alesidota*, hab.?, p. 85, *eucosmia*, Grenada, *haliostrephes*, Gulf of Mexico, p. 86, *acestra*, Havana, p. 87, *acrybia*, Florida, *tristichia*, Gulf of Mexico, p. 88, *pagodula*, Caribbean, p. 90, *premorra*, Gulf of Mexico, p. 93, *æpynota*, p. 96, *moseri*, p. 97, E. Coast U. S., DALL, Bull. Mus. C. Z. xviii (1889), figg., n. spp.  
*Eopleurotoma*, n. sect. of *Pleurotoma*, type †*P. multicostata*, Desh. ; COSSMANN, Cat. Coq. Foss. Eocene Paris, iv (1889), p. 265.  
*Epalxis*, n. sect. of *Dolicotoma*, type †*Pleurotoma crenulata*, L. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 250.  
*Genota viabrunnea*, Caribbean, DALL, Bull. Mus. C. Z. xviii, p. 80, fig.  
*Hemipleurotoma*, n. sect. of *Pleurotoma*, type †*P. archimedis*, Bell. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 260.  
*Mangilia* (*Cythura*) *bartlettii*, *cymella*, Caribbean, p. 101, (*Daphnella*) *corbicula*, *reticulosa*, Barbadoes, &c., p. 103, *pompholyx*, Barbadoes, p. 104, *retifera*, p. 105, *calyx*, p. 107, E. Coast U. S., *sofia*, Guadelupe, p. 107, (*Glyphostoma*) *phalera*, Trinidad, p. 111, (*Mangilia*) *halitropis*, Santa Cruz, p. 114, *scipio*, Caribbean, p. 117, *toreumata*, Dominica, p. 118, (*Pleurotomella*) *edgariana*, Curaçao, p. 121, *catasarca*, Caribbean, p. 124, *hadria*, E. Coast U. S. p. 125, DALL, Bull. Mus. C. Z. xviii (1889), figg., n. spp.  
*Mitromorpha buplicata*, Barbadoes, DALL, Bull. Mus. C. Z. xviii (1889), p. 165, fig. ; *M. volva*, Port Elizabeth, SOWERBY, (378) p. 7, fig. : n. spp.  
*Oxyacrum*, n. sect. of *Pleurotoma*, type †*P. oblitterata*, Desh. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 270.

*Pleurotoma periscelida*, p. 74, (*Leucosyrinx*) *tenoceras*, p. 76, E. Coast U. S., (*Ancistrosyrinx*) *radiata*, p. 78, Caribbean, DALL, Bull. Mus. C. Z. xviii, figg.; *P. (Mangilia?) simpsoni*, Florida, DALL in SIMPSON, P. Davenport Ac. v (1887), p. 54; †*P. haeringensis*, Tertiary of Häring, DREGER, Ann. Hofmuseum Wien, vii, p. 28, fig. : n. spp.

*Systenope*, n. sect. of *Raphitoma*, type †*R. polycolpa*, n. sp.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 289.

#### CANCELLARIIDÆ.

*Admetula*, n. sect. of *Cancellaria*, type †*C. evulsa*; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 224.

*Benthobia*, n. g., for *B. tryonii*, n. sp., N. Carolina; DALL, Bull. Mus. C. Z. xviii (1889), pp. 131 & 132, fig.

*Cancellaria (Trigonostoma) agassizii*, E. Coast U. S., p. 130, *microscopica*, Caribbean, p. 131, DALL, Bull. Mus. C. Z. xviii (1889), figg., n. spp.

*Plesioerithium*, n. g., type †*Cancellaria magloirei*, Mell.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 228.

*Scelrella*, n. sect. of *Cancellaria*, type †*C. quantula*, Desh.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 222.

#### RHACHIGLOSSA.

##### OLIVIDÆ and MARGINELLIDÆ.

*Ancilla pura*, n. sp., Port Elizabeth, SOWERBY, (378) p. 17, fig.

† ? *Ancillaria olivaeformis*, n. sp., Tertiary of Häring, DREGER, Ann. Hofmuseum Wien, vii, p. 26, fig.

*Marginella cassia*, p. 137, fig., Gulf of Mexico, *styria*, Sombrero Is., p. 140, DALL, Bull. Mus. C. Z. xviii; *M. electrina*, Port Elizabeth, SOWERBY, (378) p. 21, fig. : n. spp.

##### VOLUTIDÆ and MITRIDÆ.

*Mitra aquitanica*, found on the W. Coast of France; LOCARD, Échange, viii, p. 101.

*M. (Costellaria?) styria*, p. 159, fig., *rushii*, p. 160, *triphonia*, p. 161, Caribbean, (*Thalia?*) *torticula*, p. 162, Havana, (*Conomitra*) *blakeana*, Yucatan Strait, p. 163, DALL, Bull. Mus. C. Z. xviii (1889), figg.; *M. fultoni*, Lr. California, SMITH, Ann. N. H. ix, p. 256, fig. : n. spp.

*Scaphella (Auriniu) robusta*, p. 153, *gouldiana* [with its anatomy], p. 154, Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), figg.; *S. (Voluta) arnheimi*, Monterey Bay, Calif., RIVERS, Naut. v, p. 111 : n. spp.

*Voluta verconis*, S. Australia, TATE, Tr. R. Soc. S. Austr. xv, p. 125, fig.; †*V. stromboides*, Tertiary of Häring, DREGER, Ann. Hofmuseum Wien, vii, p. 25, fig. : n. spp.

FASCIOLARIIDÆ and TURBINELLIDÆ.

- Fusciolaria (Mesorhytis) meekiana*, n. sp., Gulf of Mexico, DALL, Bull. Mus. C. Z. xviii (1889), p. 172, fig.
- Fusus timesus*, p. 166, *eucosmius*, p. 167, *halistreptus*, *benthalis*, p. 168, *amiantus*, *apynotus*, p. 169, *alcimus*, p. 170, *ceramidus*, *amphiurgus*, p. 171, DALL, Bull. Mus. C. Z. xviii (1889), figg.; *F. azoricus*, Azores, DAUTZENBERG, (107) 1889, p. 32, figg.; †*F. mittereri*, Tertiary of Håring, DREGER, Ann. Hofmuseum Wien, vii, p. 23, fig. : n. spp.
- †*Glyptostyla*, n. g. for *G. panamensis*, n. sp., Tertiary of Isthmus of Darien; DALL, Tr. Wagner Inst. iii, pp. 232 & 233, figg.
- Latirulus*, n. sect. of *Latirus*, type †*Fusus subaffinis*, d'Orb.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 169.
- Pseudolatirus*, n. sect. of *Streptochetus*, type †*S. mellevillei*, n. sp.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 170.
- Turbinella truncata*, n. sp., Port Elizabeth, SOWERBY, (378) p. 17, fig.

BUCCINIDÆ.

- Chrysodomus (Sipho) rushii*, Florida, C. (?) *globulus*, Little Bahama Bank, DALL, Bull. Mus. C. Z. xviii, p. 175, fig.; *C. (Sipho) stonei*, New Jersey, PILSBRY, P. Ac. Philad. 1892, p. 328, figg. : n. spp.
- Columbellisipho*, n. sect. of *Sipho*, type †*Fusus hordeolus*, Lamk.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 146.
- Cominella semisulcata*, C. (?) *sulcata*, n. spp., Port Elizabeth, SOWERBY, (378) pp. 10 & 11, figg.
- Coptochetus*, n. sect. of *Siphonalia*, type †*Fusus scalaroides*, Lamk.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 153.
- Endopachychilus*, n. sect. of *Tritonidea*, type †*Purpura crassilabrum*, Desh.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 136.
- Hindsia grimaldi*, n. sp., Azores, DAUTZENBERG, (107) 1889, p. 33, figg.
- Liomesus (?) stimpsoni*, n. sp., Carolina, DALL, Bull. Mus. C. Z. xviii (1889), p. 176, fig.
- Nassaria bushii*, *columbellata*, p. 182, *grayi*, p. 183, n. spp., Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), figg.
- Neptunea nicolloni*, Loc., W. Coast of France; LOCARD, Échange, vii (1891), p. 34.
- Pisania scholviemi*, n. sp., Njaning, Senegambia, ROLLE, Nachr. mal. Ges. 1892, p. 51.
- Pollicia reticulata*, *azona*, n. spp., Kalymos Is., BÆTTGER, Ber. Senck. Ges. 1892, p. 153.
- Tortisipho*, n. sect. of *Sipho*, type †*Fusus jucundus*, Desh.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 147.
- Volutharpa salmiana*, n. sp., Japan, ROLLE, Nachr. mal. Ges. 1892, p. 52.

NASSIDÆ and COLUMBELLIDÆ.

- Nassa*: Gould's types not lost; MARSHALL, Naut. vi, p. 47.
- Nassa scissurata*, Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), p. 185; *N. crawfordi*, Port Elizabeth, SOWERBY, (378) p. 13, fig. : n. spp.

*Columbellidae*: monograph by KOBELT, pp. 1-128, pla. i-xviii; MARTINI & CHEMNITZ (246).

*Columbella*: Gould's types not lost; MARSHALL, Naut. vi, p. 47.

*C. (Astyris) profundis*, Havana, DALL, Bull. Mus. C. Z. xviii (1889), p. 192, fig.; *C. (Amphissa) bicolor*, San Pedro Bay, DALL in WILLIAMSON, P. U. S. Nat. Mus. xv, p. 213, fig.; *C. (Mitrella) unisulcata*, p. 119, Tasmania, KOBELT in MARTINI & CHEMNITZ (246); *C. capensis*, *algoensis*, South Africa, SOWERBY, (378) p. 22, figg.; *C. (Nitidella) incerta*, Galapagos Is., STEARNS, Naut. vi, p. 88; *C. cominellaformis*, S. Australia, TATE, Tr. R. Soc. S. Austr. xv, p. 126, fig. : n. spp.

#### MURICIDÆ and CORALLIOPHILIDÆ.

*Coralliophila lactuca*, n. sp., Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), p. 220, fig.

*Eupleura stimpsonii*, n. sp., Barbadoes, DALL, Bull. Mus. C. Z. xviii (1889), p. 204.

*Magilus*, Montf., revision of the genus; BAKER, P. Rochester Acad. ii, pp. 37-40, fig.

*Murex (Phyllonotus) hystricinus*, Caribbean, p. 200, (*Pteronotus*) *phaneus*, Florida, p. 201, *tristichus*, Cuba, p. 202, (*Muricidea*) *philippiana*, Caribbean, p. 213, DALL, Bull. Mus. C. Z. xviii (1889), figg.; *M. (Ocinebra?) crawfordi*, *babingtoni*, South Africa, SOWERBY, (378) p. 2, figg.; *M. guembeli*, Tertiary of Häring, DREGER, Ann. Hofmuseum Wien, vii, p. 24, fig. : n. spp.

*Trophon (Aspella) scalarioides*, anatomy; DALL, Bull. Mus. C. Z. xviii (1889), p. 209.

*T. (Boreotrophon) lacunellus*, p. 205, *actinophorus*, p. 206, Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), figs.; *T. dabneyi*, p. 36, *droueti*, p. 37, Azores, DAUTZENBERG, (107) 1889, figg. : n. spp.

#### TÆNIOGLOSSA.

##### TRITONIDÆ, CASSIDIDÆ, DOLIIDÆ, and CYPREIDÆ.

*Amphiperas (Simnia) piragua*, p. 235, *aureocincta*, p. 236, n. spp., Caribbean, DALL, Bull. Mus. C. Z. xviii (1889).

† *Cassidaria haeringensis*, n. sp., Tertiary of Häring, DREGER, Ann. Hofmuseum Wien, vii, p. 21, fig.

† *Cassis fuchsi*, n. sp., Tertiary of Häring, DREGER, Ann. Hofmuseum Wien, vii, p. 21, fig.

*Cypræa chrysalis*, Kiener, and *C. amphithales*, Melv., notes on; MELVILLE, Journ. Conch. vii, pp. 120-123.

*Dolium (Eudolium) verrillii*, n. sp., Grenada, DALL, Bull. Mus. C. Z. xviii (1889), p. 233, fig.

*Lampusia? pharcida*, n. sp., Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), p. 227, fig.

- Monocirsus*, n. sect. of *Triton*, type †*T. carinulatus*, n. sp., COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 112.  
*Ovula carnea*, Poiret : distribution; FISCHER, J. de Conch. 1892, pp. 77 & 78; WATSON, t. c. p. 208.  
*Pyrula* : review of the genus; SOWERBY, Conchologist, ii, pp. 73-75.  
*P. filosa*, n. sp., Hong Kong, SOWERBY, Conchologist, ii, p. 74.  
†*Tritonium hœringense*, n. sp., Tertiary of Håring, DREGER, Ann. Hofmuseum Wien, vii, p. 22, fig.

# STROMBIDÆ and APOBRHAIIDÆ.

- †*Alaria acuta*, n. sp., Neocomian of the Argentine Cordilleras, BEHRENDSEN, Z. geol. Ges. xlv, p. 19, fig.  
*Amplogladius*, n. sect. of *Gladius*, type †*Rostellaria athleta*, d'Orb.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 90.  
*Ectinochilus*, n. sect. of *Rimella*, type †*Strombus canalis*, Lam.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 87.  
†*Rostellaria haueri*, n. sp., Tertiary of Håring, DREGER, Ann. Hofmuseum Wien, vii, p. 18, fig.  
*Semiterellum*, n. sect. of *Gladius*, type †*Rostellaria marceauzi*, Desh.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 91.  
*Wateletia*, n. sect. of *Gladius*, type †*Rostellaria geoffroyi*, Wat.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 90.

# CERITHIIDÆ, PLANAXIDÆ, and TRICHOTROPIDIDÆ.

- Cerithiidae* : inner palatal folds of fossil forms; OPPENHEIM, Z. geol. Ges. xlv, pp. 439-446.  
*Aneurychilus*, n. sect. of *Sandbergeria*, type †*Cerithium secale*, Desh.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 34.  
*Cerithiopsis matura*, *martensii*, p. 255, *acutium*, p. 256, n. spp., Caribbean, DALL, Bull. Mus. O. Z. xviii (1889), fig.  
*Cerithium foveolatum*, n. sp., Port Elizabeth, SOWERBY, (378) p. 36, fig.  
*Ezechestoma*, n. sect. of *Potamides*, type †*Cerithium angulosum*, Lamk.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 71.  
*Granulolabium*, n. sect. of *Potamides*, type †*Cerithium plicatum*, Desh.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 76.  
*Mellevillia*, n. sect. of *Fastigiella*, type †*Cerithium gibbosulum*, Mell.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 36.  
*Orthochilus*, n. sect. of *Planaxis*, type †*Cerithium bezanconi*, De R.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 7.  
†*Pseudoscalites*, n. g. for *P. elegantissimus* (Klipst MS.), n. sp.; KITTL, Ann. Hofmuseum Wien, vii, p. 66, fig.  
*Semivertagus*, n. sect. of *Cerithium*, type *C. vertagus*, Lin.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 28.  
*Tiarella*, n. sect. of *Lovenella*, type †*Cerithium pupina*, Desh.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 50. [Altered to *Cyrbasia*, Harris & Burrow, 1891.]



- Trachyschænium*, n. sect. of *Lovenella*, type †*Cerithium alceolatum*, Desh.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 47.  
*Triforis* (*Inella*) *sarissa*, Barbadoes, p. 247, (*Sychar*) *samanæ*, San Domingo, p. 248, n. spp., DALL, Bull. Mus. C. Z. xviii (1889).  
*Tylochilus*, n. sect. of *Potamides*, type †*Cerithium tuba*, Desh.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iv (1889), p. 76.

## VERMETIDÆ and TURRITELLIDÆ.

- Acrocolum*, n. sect. of *Mathildia*, type †*M. bouryi*, n. sp., COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 315.  
*Mathildia barbadense*, p. 266, fig., Barbadoes, *rushii*, *scitula*, p. 267, n. spp., E. Coast U. S., DALL, Bull. Mus. C. Z. xviii (1889).  
†*Siliquaria* (?) *triadica*, n. sp., Trias of St. Cassian, KITTL, Ann. Hofmuseum Wien, vii, p. 56, fig.  
*Thylacodes medusæ*, n. sp., Japan, MACGEORGE, Le Nat. 1892, p. 123, fig.  
*Turritella* (*Torcula*) *acropora*, Transatlantic and Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), p. 264; *T. maltzani*, Gorée, Senegambia, ROLLE, Nachr. mal. Ges. 1892, p. 51; †*T. paedopsis*, *subtilestriata*, *fasciata*, p. 55, *abbatis*, p. 56, Trias of St. Cassian, KITTL, Ann. Hofmuseum Wien, vii, figg. : n. spp.  
*Vermetidæ* of the Mediterranean, with *Vermetus spirintortus*, p. 22, *simulans*, p. 25, *serpuloides*, p. 41, n. spp.; MONTEROSATO, Bull. Soc. Mal. Ital. xvii.

## PSEUDOMELANIIDÆ and MELANIIDÆ.

- †*Angularia*, n. g., with *A. marginata*, n. sp., Alpine Trias; KOKEN, JB. Mineral. 1892, ii, p. 32; WOEHRMANN & KOKEN, Z. geol. Ges. xlv, p. 198, fig.  
†*Chemnitzia manzavinii*, Trias of Balia, Asia Minor, BITTNER, JB. geol. Reichsanst. xlii, p. 87, fig.; †*C. longiscata*, *solida*, Alpine Trias, WOEHRMANN & KOKEN, Z. geol. Ges. xlv, p. 199, fig. : n. spp.  
†*Hypsipleura*, n. g., with *H. cathedralis*, n. sp., Alpine Trias; KOKEN, JB. Mineral. 1892, ii, p. 32; WOEHRMANN & KOKEN, Z. geol. Ges. xlv, p. 201, fig.  
†*Katosira*, n. g., with *K. fragilis*, *abbreviata*, n. spp., Alpine Trias; KOKEN, JB. Mineral. 1892, ii, p. 31; WOEHRMANN & KOKEN, Z. geol. Ges. xlv, p. 205, figg.  
†*Lozonema pyrgula*, *lineatum*, n. spp., Alpine Trias, WOEHRMANN & KOKEN, Z. geol. Ges. xlv, p. 202, figg.  
*Melania verrii*, De Stef., varieties; FORESTI, Bull. Soc. Mal. Ital. xvi, p. 74, figg.  
*M. jacquetiana*, *joretiana*, *terminalis*, *dolium*, *M. (?) rotundata*, p. 166, China, HEUDE (186), figg.; *M. tornata*, Albert Nyansa, MARTENS, SB. nat. Fr. 1892, p. 181; *M. ten-katei*, Soemba, SCHEPMAN, Notes Leyd. Mus. xiv, p. 156, fig. : n. spp.

- Melaniidae* : inner palatal folds of fossil forms ; OPPENHEIM, Z. geol. Ges. xlv, pp. 439-446.
- Melanopsis harpa*, Spain, WESTERLUND, Nachr. mal. Ges. 1892, p. 199 ; *M. harpa* [= *costata* var.], Spain, WESTERLUND, An. Soc. Esp. xxi, p. 389 ; †*M. pentagona*, p. 138, *stricturata*, p. 139, *bogdanowi*, p. 142, *blanchardi*, p. 143, Tertiary of Markuševac (Croatia), BRUSINA, Glasnik. Naravosl. Društ. vii : n. spp.
- †*Melanoptychia paradoxa*, p. 144, *varinodosa*, p. 145, n. spp., Tertiary of Markuševac (Croatia), BRUSINA, Glasnik. Naravosl. Društ. vii.
- Potamanax*, n. subg. of *Pachychilus*, for *P. rovirosai*, n. sp., Tabasco, Mexico ; PILSBRY, P. Ac. Philad. 1892, p. 341, fig.
- Pachychilus* : anatomy ; FISCHER & CROSSE, (133) pp. 322-327.
- P. (polygonatus*, Lea, ? var.) *rovirosai*, Mexico, PILSBRY, P. Ac. Philad. 1892, p. 153, fig. : possible n. sp.
- †*Pustularia*, n. g. for *Chemnitzia alpina*, Eichw., Alpine Trias ; KOKEN, JB. Mineral. 1892, ii, p. 32 ; WOEHRMANN & KOKEN, Z. geol. Ges. xlv, p. 203, fig.
- Plotia leroyi*, p. 185, *bloyeti*, p. 186, n.spp., E. Centr. Africa, BOURGUIGNAT, (37) 1889.
- Semisinus* : anatomy ; FISCHER & CROSSE, (133) pp. 315-317.
- †*Undularia*, n. g. for *Turritella carinata*, Münster, Alpine Trias ; KOKEN, JB. Mineral. 1892, ii, p. 31 ; WOEHRMANN & KOKEN, Z. geol. Ges. xlv, p. 200, fig.
- †*Zygopleura*, n. g., with *Z. spinosa*, n. sp., and *Coronaria*, n. sect., with *Z. coronata*, n. sp., Alpine Trias ; KOKEN, JB. Mineral. 1892, ii, p. 30 ; WOEHRMANN & KOKEN, Z. geol. Ges. xlv, pp. 203-5, figg.

## LITTORINIDÆ and FOSSARIDÆ.

- Cirsope*, n. sect. of *Lacuna*, type †*L. marginata*, Desh. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 275.
- Cühna jeffreysi*, n. sp., Azores ; DAUTZENBERG, (107) 1889, p. 44, figg.
- Entomope*, n. sect. of *Lacuna*, type †*Litiopa klipsteini*, COSSM. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 273.
- Fossarus (Gottina) bella, compacta*, n. spp., Caribbean ; DALL, Bull. Mus. C. Z. xviii (1889), pp. 272 & 273, figg.
- †*Lacuna karreri*, *L. (?) incrassata*, n. spp., Trias of St. Cassian, KITTL, Ann. Hofmuseum Wien, vii, p. 97, figg.
- Littorina rudis*, Maton, monstrosities ; SYKES, P. Dorset Field Club, xiii, pp. 191-198, figg.
- L. (Tectarius) galapagensis*, p. 87, Galapagos Is., *atyphus*, p. 88, Manta, Ecuador, n. spp., STEARNS, Nant. vi.
- Medoriopsis*, n. sect. of *Lacuna*, type †*L. effusa*, Desh. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 270.
- Prosthenodon*, n. sect. of *Littorina*, type †*L. mondonga*, Desh. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 261.

- † *Pseudofossarus*, n. n., = *Fossarus*, Laube, *non* Philippi; KOKEN, JB. Mineral. 1892, ii, p. 27; WOEHRMANN & KOKEN, Z. geol. Ges. xliv, p. 191, fig.
- † *Purpurina vaccki*, n. sp., Trias of St. Cassian; KITTL, Ann. Hofmuseum Wien, vii, p. 64, fig.
- † *Tretospira*, n. g., allied to *Purpurina*, with *T. multistriata*, n. sp., Alpine Trias; KOKEN, JB. Mineral. 1892, ii, p. 32; WOEHRMANN & KOKEN, Z. geol. Ges. xliv, pp. 196 & 197, fig.

## SOLARIIDÆ.

- Fluxina discula*, n. sp., Dominica; DALL, Bull. Mus. C. Z. xviii (1889), p. 273, figg.
- Homologyra ornata*, n. sp., Azores, DAUTZENBERG, (107) 1889, p. 46, figg.
- Solarium peracutum*, *sigsbeei*, n. spp., Caribbean; DALL, Bull. Mus. C. Z. xviii (1889), p. 275, figg.

## JEFFREYSIIDÆ, LITIOPIDÆ, and RISSOIDÆ.

- Alvania rufopunctata*, Kalymos Is., BÆTTGER, Ber. Senck. Ges. 1892, p. 158; *A. poucheti*, p. 49, *lamellata*, p. 50, Azores, DAUTZENBERG, (107) 1889, figg. : n. spp.
- Benthonella*, n. g. for *B. gaza*, *fischeri*, *nisonis*, Caribbean; DALL, Bull. Mus. C. Z. xviii (1889), pp. 282-285.
- † *Chevallieria*, n. g., type † *C. labrosa*, n. sp., Eocene of Paris, COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 244, fig.
- Dialu infrasulcata*, *dubia*, n. spp., Port Elizabeth, SOWERBY, (378) p. 27, figg.
- Hemibia sublevis*, p. 168, *carectorum*, *luteola*, *crassa*, *longiscuta*, *costulata*, p. 169, n. spp., China, HEUDE, (186) figg.
- Jeffreysia atlantica*, n. sp., St. Helena, SMITH, Ann. N. H. 1892, p. 130.
- Onoba moreleti*, n. sp., Azores, DAUTZENBERG, (107) 1889, p. 52, figg.
- Rissoa*: notes on; TOMLIN, Brit. Nat. 1892, pp. 72-74, 155 & 156, 179 & 180, 257 & 258.
- R. precipitata*, Yucatan Strait, DALL, Bull. Mus. C. Z. xviii (1889), p. 279, fig.; *R. guernei*, p. 47, *obesula*, p. 48, Azores, DAUTZENBERG, (107) 1889, figg.; *R. (Alvania) argentea*, (*Cingula*) *capensis*, Port Elizabeth, SOWERBY, (378) p. 38, figg.; † *R. tirolensis*, Alpine Trias, WOEHRMANN & KOKEN, Z. geol. Ges. xlv, p. 207, fig. : n. spp.
- Setia roseotincta*, n. sp., Azores, DAUTZENBERG, (107) 1889, p. 53, figg.

## HYDROBIIDÆ and PALUDINIDÆ.

- † *Acrophylictis*, n. g., type † *Bithinia eugenei*, Desh., Eocene of Paris; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 233, fig.
- † *Baglivia*, n. g. for *B. rugosula*, p. 146, *goniogyra*, *strongylogyra*, p. 147, *streptogyra*, *ambigua*, p. 148, n. spp., Tertiary of Markuševac (Croatia), BRUSINA, Glasnik Naravosl. Društ. vii.
- Belgrandia coutagnei*, n. sp., Avignon, LOCARD, Échange, viii, p. 3.

- Bythynella dunkeri*, Frauent., remarks on ; SIMROTH, Mal. Bl. xi, pp. 106 & 107, figg.
- B. boeniensis*, Bosnia, CLESSIN, Mal. Bl. xi, p. 120, fig. ; *B. depereti*, *deformata*, *lartetiaformis*, *ventricosa*, *anglesiana*, (*Lartetia*) *pontmartiniana*, *boulayi*, *chobauti*, *chantrei*, *gabilloti*, *duhameli*, *collieri*, *cureti*, (*Moitessieria*) *collieri*, Avignon, NICOLAS, Ann. Soc. Agric. Lyon, iv, pp. 34-48, figg. ; *B. scitula*, Tertiary of Markuševac (Croatia), BRUSINA, Glasnik Naravosl. Društ. vii, p. 154 : n. spp.
- Bythinia tentaculata*, development ; ERLANGER, MT. z. Stat. Neap. x, pp. 376-407, fig.
- B. delavayana*, p. 170, *touchéana*, *chinensis*, *scalaris*, p. 171, *spiralis*, p. 172, n. spp., China, HEUDE, (186) figg.
- † *Caspia dybowskii*, p. 155, *obtusa*, *acicula*, p. 156, *incerta*, p. 157, n. spp., Tertiary of Markuševac (Croatia), BRUSINA, Glasnik Naravosl. Društ. vii.
- Hydrobia texana*, Texas, PILSBRY, P. Davenport Ac. v (1887), p. 33 ; † *H. vidotici*, *taediosa*, p. 149, *atropida*, p. 151, *monotropida*, *ditropida*, p. 152, *polytropida*, p. 153, Tertiary of Markuševac (Croatia), BRUSINA, Glasnik Naravosl. Društ. vii : n. spp.
- Hypsobia*, n. g. for *H. humida*, China ; HEUDE, (186) p. 173, figg.
- Lacunopsis dugasti*, n. sp., Laos, MORLET, J. de Conch. 1892, p. 84.
- † *Micromelania sulcata*, *lineolata*, p. 161, *gracilis*, p. 162, n. spp., Tertiary of Markuševac (Croatia), BRUSINA, Glasnik Naravosl. Društ. vii.
- Paludestrina jenkinsi*, Smith, and *ventrosa*, Mont., difference between the radulae ; WOODWARD, Ann. N. H. ix, pp. 376-378, figg.
- Paludina* : development of the liver ; H. FISCHER, CR. Soc. Biol. iii, p. 644.
- Paludina diminuta*, *leucostoma*, *fluminalis*, *catayensis*, p. 175, *ventricosa*, *aubryana*, *dispiralis*, p. 175, *purificata*, *fantozatina*, p. 175, *lapillorum*, *demolita*, *deformis*, p. 177, China, HEUDE, (186), figg. ; *P. constricta*, Victoria Nyanza, MARTENS, Conch. Mittheil. iii (1889), p. 16, fig. ; *P. laosiensis*, Indo China, MORLET, J. de Conch. 1892, p. 85 : n. spp. [See also *infra*, *Vivipara*.]
- Polycirsus*, n. sect. of *Hydrobia*, type † *Bythinia tuba*, Desh. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 219.
- † *Prososthenia croatica*, n. sp., Tertiary of Markuševac (Croatia), BRUSINA, Glasnik Naravosl. Društ. vii, p. 163.
- Pseudumnicola euboica*, Eubœa, p. 45, *nebrodenis* [= *vestita*, Benoit, 1882], Sicily, p. 50, n. spp., KOBELT in ROSSMAESSLER, (322) v, figg.
- Pyrgulopsis scalariformis*, Wolf, note on ; SHIMEK, Bull. Lab. Iowa, ii, p. 168.
- Rivularia*, n. g., for *R. glandina*, *subelliptica*, p. 178, *elongata*, *ovum*, *globosa*, p. 179, China ; HEUDE (186), figg.
- Stenothyra touchéana*, China, HEUDE, (186) p. 173, figg., n. sp.
- Vivipara phthimotropis*, p. 17, *trochlearis*, and *costulata*, p. 18, Victoria Nyanza, MARTENS, SB. nat. Fr. 1892 ; *V. victoriae*, *jucundus*, *cepoides*, Victoria Nyanza, SMITH, Ann. N. H. x, pp. 124 & 125, figg. : n. spp. [See also *suprà*, *Paludina*.]

## VALVATIDÆ, AMPULLARIIDÆ, and ASSIMINEIDÆ.

- Ampullaria brohardi*, Cambodia, GRANGER, Le Nat. 1892, p. 97, fig.;  
*A. nyanzae, gordonii*, Victoria Nyanza, SMITH, Ann. N. H. x,  
 p. 382 : n. spp.  
*Assiminea littorina*, Delle Chiaie, in Malta; CARUANA-GATTO, Med. Nat.  
 ii, p. 245.  
*Chlorostracia massiei*, n. sp., Laos, MORLET, J. de Conch. 1892, p. 84.  
*Lyogyrrus*, notes on, and *L. dalli*, n. sp., Florida; PILSBRY, Naut. vi,  
 pp. 61 & 62.  
*Melodomus* [= *Lanistes*] *bloyeti, nitidissimus*, p. 171, *deguerryanus*, p. 175,  
*alexandri*, p. 177, n. spp., E. Centr. Africa, BOURGUIGNAT, (37) 1889,  
 figg.  
 †*Orygoceras corniculum*, p. 169, *filocinctum, cultratum, cnemopsis*, p. 171,  
 n. spp., Tertiary of Markuševac (Croatia), BRUSINA, Glasnik Naravosl.  
 Druzt. vii.  
*Valvata rovoili*, E. Centr. Africa, BOURGUIGNAT, (37) 1889, p. 189, fig.;  
 †*V. cyclostrema, leptonema*, Tertiary of Markuševac (Croatia),  
 BRUSINA, Glasnik Naravosl. Druzt. vii, p. 167 : n. spp.

## CYCLOPHORIDÆ.

- Alycoeus expansus, dolichodeiros*, p. 129, *dolomiticus, monadicus*, p. 130,  
 n. spp., China, HEUDE (186), figg.  
*Aperostoma* (*Amphicyclotus*) *goldfussi*, n. sp., Honduras, BERTGER, Nachr.  
 mal. Ges. 1892, p. 203.  
*Cyclophorus zebrinus*, Bena, on a variety, and on the periostracum of;  
 SMITH, Conchologist, ii, p. 6.  
*C. orbigny*, E. Bolivia, ANCEY, Journ. Conch. vii, p. 94; *C. elatior*,  
*papillaris*, Butumbi, N. E. Africa, MARTENS, SB. nat. Fr. 1892,  
 p. 180; *C. preussi*, Cameroons, MARTENS, SB. nat. Fr. 1892, p. 183;  
*C. tornatus*, Tonkin, MORLET, J. de Conch. xxxii, p. 322, fig.; †*C.*  
*matheroni*, Upper Rognacian of Les Baux, NICOLAS, C.R. Ass. Fr. Sci.  
 1891, ii, p. 452, fig. : n. spp.  
*Cyclotus erroneus*, China, HEUDE, (186) p. 128, figg.; †*C. nicolasis*, Upper  
 Rognacian of Les Baux, NICOLAS, C.R. Ass. Fr. Sci. 1891, ii, p. 453,  
 fig.; *C. soembaensis*, Soemba, SCHEPMAN, Notes Leyd. Mus. xiv,  
 p. 158, fig.; *C. filo-liratus*, Bogota, SOWERBY, P. Z. S. 1892, p. 298,  
 fig. : n. spp.  
*Diplommata decorosa*, p. 510, *garoensis, elongata*, p. 511, *chennelli, butleri*,  
 p. 512, *ambigua, commutata, dohertyi*, p. 513, *thomsoni, nengloensis*,  
*distincta*, p. 514, *khunhoensis, lapillus, compacta*, p. 515, *unierrenati*,  
*jupooensis, animula*, p. 516, *subrubella, subtilis, delicata*, p. 517, *muni-*  
*purensis, venustula, domuncula*, p. 518, *succinea, concinna, gibberosa*,  
 p. 519, GODWIN-AUSTEN, P. Z. S. 1892; *D. egregia*, Queensland,  
 HEDLEY & MUSSON, P. Linn. Soc. N.S.W. vi, p. 561, fig.; *D. inter-*  
*media, abbreviata, minuscule*, China, HEUDE, (186) p. 131, figg. :  
 n. spp.

- Geothauma*, n. g., type *Opisthostoma grandispinosum*, Godwin-Austen ;  
CROSSE, J. de Conch. 1892, pp. 282-284, fig.
- Hedleya*, n. g. for *H. macleayi*, n. sp., allied to *Pupina*? Solomon Is. ;  
COX, P. Linn. Soc. N.S.W. vi, p. 568, figg.
- Hungerfordia* : notes on ; CROSSE, J. de Conch. 1892, pp. 280-282, fig.
- Leptopoma halmahericum*, *crenilabre*, n. spp., Halmahera [Moluccas],  
STRUBELL, Nachr. mal. Ges. 1892, pp. 48 & 49.
- Maizania*, n. g. for *M. olivacea*, n. sp., E. Centr. Africa ; BOURGUIGNAT,  
(37) 1889, p. 149, fig.
- † *Megalomastoma julliani*, n. sp., Upper Rognacian of Les Baux ;  
NICOLAS, C.R. Ass. Fr. Sci. 1891, ii, p. 454, fig.
- Opisthoporus hyperborealis*, n. sp., China, HEUDE, (186) p. 128, figg.
- Paxillus borealis*, n. sp., China, HEUDE, (186) p. 131, fig.
- Pomatias (Auritus) eirciticus*, n. sp., Sicily, WESTERLUND, Nachr. mal. Ges.  
1892, p. 198.
- Procyclus*, n. g. for Asiatic species of *Cyclotus*, type *C. gassiesiamus*,  
CROSSE ; FISCHER, Bull. Soc. Autun, iv, p. 183.
- Pupina costata*, n. sp., Queensland, HEDLEY & MUSSON, P. Linn. Soc.  
N.S.W. vi, p. 559, fig.
- Spiraculum massiei*, n. sp., Laos, MORLET, J. de Conch. 1892, p. 85.

## CYCLOSTOMATIDÆ, ACICULIDÆ, and TRUNCATELLIDÆ.

- Acme allardi*, alleged n. sp., Avignon, NICOLAS, Ann. Soc. Agric. Lyon, iv,  
p. 49, fig.
- Acroptychia notabilis*, Madagascar, SMITH, Conchologist, ii, p. 23.
- Cyclostoma burtoni*, Tanganyka, ANCEY, Brit. Nat. 1892, p. 126, fig. ;  
*C. leroyi*, E. Centr. Africa, BOURGUIGNAT, (37) 1889, p. 152, figg. ;  
† *C. jagici*, Tertiary of Markuševac (Croatia), BRUSINA, Glasnik  
Naravosl. Društ. vii, p. 172 : n. spp.
- Tropidophora freyi*, n. sp., Is. Nossi-Bé [Madagascar], BÆTTGER, Nachr.  
mal. Ges. 1892, p. 55.
- † *Truncatella bezançoni*, n. sp., Oligocene of Etampes ; COSSMANN, J. de  
Conch. xxxii, p. 358, fig.

## HIPPONYCIDÆ and CAPULIDÆ.

- Amalthea* [= *Hipponyx*] *benthophila*, n. sp., Caribbean, DALL, Bull. Mus.  
C. Z. xviii (1889), p. 289, fig.
- Calyptraeida* : anatomy and morphology ; HALLER, Morph. JB. xviii, pp.  
489-518.
- Capulus hungaricus* : structure and development ; ERLANGER, Zool. Anz.  
xv, pp. 465-468.
- O. (Hyalorisia) galea*, n. sp., Barbadoes, DALL, Bull. Mus. C. Z. xviii  
(1889), p. 288, fig.
- Crepidula fornicata* : cleavage of the ovum ; CONKLIN, Zool. Anz. xv, pp.  
185-188, figg.  
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*Crepidula* of the New Jersey Coast ; STONE, Naut. vi, pp. 40-42, figg.

† *Delphinulopsis*, Laube, is restored as a genus by KITTL, Ann. Hofmuseum Wien, vii, p. 58.

† *D. laubei*, n. sp., Trias of St. Cassian, KITTL, Ann. Hofmuseum Wien, vii, p. 62, fig.

*Platyceras* : notes on Palæozoic species of the group ; KEYES, Am. Geol. x, pp. 273-277.

† *Rothpletzia rudistu*, Sim. : on its zoological affinities ; SIMONELLI, Boll. Soc. geol. Ital. xi, pp. 76-80, figg.

#### NARICIDÆ, NATICIDÆ, OOCORYTHIDÆ, and ADEORBIIDÆ.

*Adeorbis* (*Clathrella*) *naticoides*, n. sp., N. Carolina, DALL, Bull. Mus. C. Z. xviii (1889), p. 278.

*Crommium*, n. sect. of *Ampullina*, type † *A. willemeti*, Desh., COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 177.

*Dalium*, n. g. for *D. solidum*, n. sp., Grenada, DALL, Bull. Mus. C. Z. xviii (1889), p. 230, fig.

*Dialytostoma*, n. sect. for *Escharella* [altered 1891 to *Micreschara*], type † *Fossarus fischeri*, De Laub. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 185.

† *Natica* (*Naticina*) *geinitzi*, Rupelian of Germany, BËTTGER, Mal. Bl. ix, p. 89 ; *N. castrensis*, p. 293, (*Neverita*) *nubila*, p. 294, Caribbean, DALL, Bull. Mus. C. Z. xviii (1889) ; *N. (Lunatia) fordiana*, Florida, SIMPSON, P. Davenport Ac. v (1889), p. 72 ° ; † *N. bodenbenderi*, Inf. Oolite of the Argentine Cordilleras, BEHRENDSEN, Z. geol. Ges. xlv, p. 13, fig. ; † *N. berwerthi*, p. 86, *transiens*, p. 89, Trias of St. Cassian. KITTL, Ann. Hofmuseum Wien, vii, figg. : n. spp.

† *Naticella* (?) *anomala*, n. sp., Trias of St. Cassian, KITTL, Ann. Hofmuseum Wien, vii, p. 71, fig.

*Naticidæ* : anatomy and morphology ; HALLER, Morph. JB. xviii, pp. 451-489, figg.

† *Neritaria*, n. g., with *N. similis*, n. sp., Alpine Trias, WOEHRMANN & KOKEN, Z. geol. Ges. xlv, p. 192, figg.

*Macromphalina*, n. sect. for *Escharella* [altered 1891 to *Micreschara*], type † *Sigaretus problematicus*, Desh. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 184.

*Micromphalina*, n. sect. of *Escharella* [altered 1891 to *Micreschara*], type † *Lacuna elegans*, Desh. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 187.

† *Ptychostoma* *stachei*, *washneri*, p. 95, *mojsisovicsi*, *fasciatum*, p. 96, n. spp., Trias of St. Cassian, KITTL, Ann. Hofmuseum Wien, vii, figg.

*Sigaretopsis*, n. sect. of *Natica*, type † *B. infundibulum*, Wat. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 172.

*Sigaretus minor*, (*Eunaticina*) *carolinensis*, n. spp., Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), p. 297.

PTENOGLOSSA.

SCALARIIDÆ.

- Aclis egregia, nucleata*, Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), p. 325, figg.; *A. tenuistriata*, Port Elizabeth, SOWERBY, (378) p. 28, fig. : n. spp.
- Bifidoscala*, n. sect. of *Scalaria*, type †*S. lemoinei*, De Boury ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 135.
- †*Chilocyclus*, Bronn : restored as a genus by KITTL, Ann. Hofmuseum Wien, vii, p. 52.
- Scala scipio, apiculata*, p. 310, *babylonia*, p. 311, *retifera*, p. 312, *frielei, rushii, sericifila*, p. 313, *nitidella, muscapedia*, p. 314, *belaurita*, p. 316, *contorquata*, p. 318, *polacia*, p. 319, *aurifila*, p. 322, *concava*, p. 323, *discobolaria*, p. 324, Transatlantic and Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), figg.; *S. rodleri, subulata*, Tertiary of Häring, DREGER, Ann. Hofmuseum Wien, vii, pp. 14 & 15, figg.; †*S. (?) triadica*, p. 45, *S. damesi*, p. 51, Trias of St. Cassian, KITTL, Ann. Hofmuseum Wien, vii, figg. : n. spp.

GYMNOGLOSSA.

EULIMIDÆ and PYRAMIDELLIDÆ.

- Phylogeny of the species of *Eulimidæ* and *Pyramidellidæ* from the Tertiary strata of N. Italy ; SACCO, Mem. Acc. Tor. xlii, pp. 585-682.
- Auriculina lucida*, n. sp., Port Elizabeth, SOWERBY, (378) p. 37, fig.
- Cingulina acutilirata*, n. sp., Port Elizabeth, SOWERBY, (378) p. 27, fig.
- Cyclodostomia*, n. subg. of *Odostomia*, with n. spp., Tertiary of N. Italy ; SACCO, Mem. Acc. Tor. xlii, p. 628.
- Diptychus*, n. sect. of *Syrnola*, type †*Pyramidella clandestina*, Desh. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 95.
- Eulima (Leiostraca) fusus*, Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), p. 329, fig. ; *E. langleyi*, Port Elizabeth, SOWERBY, (378) p. 27, fig. : n. spp.
- Eulimella (Stylopsis) resticula*, n. sp., Florida Keys, DALL, Bull. Mus. C. Z. xviii (1889), p. 338.
- Hordeulima*, n. subg. of *Eulima*, with †*H. hordeola*, n. sp., Tertiary of N. Italy ; SACCO, Mem. Acc. Tor. xlii, p. 599, fig.
- Lozoptyzis*, n. sect. of *Syrnola*, type †*S. conulus*, n. sp. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 103.
- Macrostomia*, n. subg. *Odostomia*, with n. spp., Tertiary of N. Italy ; SACCO, Mem. Acc. Tor. xlii, p. 625, fig.
- Margineulima*, n. sect. of *Eulima*, type †*E. fullax*, Desh. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 121.
- Miralda crispa*, n. sp., Port Elizabeth, SOWERBY, (378) p. 37, fig.
- †*Odontostomia lamberti*, n. sp., Oligocene of Etampes, COSSMANN, J. de Conch. 1892, p. 347, fig.



- Peristichia*, n. g., for *P. toreta*, Florida Keys, *agria*, Cape Hatteras; DALL, Bull. Mus. C. Z. xviii (1889), pp. 339 & 340.
- Pharcidella*, n. sect. of *Pyramidella* [q. v.].
- Ptycheulimella*, n. subg. of *Eulimella*, with n. spp., Tertiary of N. Italy; SACCO, Mem. Acc. Tor. xlii, p. 641.
- Pyramidella* (*Pharcidella*) *folinii*, n. sp., Barbadoes, DALL, Bull. Mus. C. Z. xviii (1889), p. 334.
- Pyrgolampros*, n. subg. of *Turbonilla*, with n. spp., Tertiary of N. Italy; SACCO, Mem. Acc. Tor. xlii, p. 667, fig.
- †*Spica*, ? n. g., with *S. monterosatoi*, n. sp., Tertiary of N. Italy; SACCO, Mem. Acc. Tor. xlii, p. 645, fig.
- Strioturbonilla*, n. subg. of *Turbonilla*, with n. spp., Tertiary of N. Italy; SACCO, Mem. Acc. Tor. xlii, p. 676, fig.
- Sulcosubularia*, n. subg. of *Eulima*, with †*S. taurinensis*, n. sp., Tertiary of N. Italy; SACCO, Mem. Acc. Tor. xlii, p. 599, fig.
- Sulcoturbonilla*, n. subg. *Turbonilla*, for †*S. turricula*, Eich. ; SACCO, Mem. Acc. Tor. xlii, p. 674, fig.
- Turbonilla* *belothea*, p. 335, *curta*, p. 337, Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), figg.; *T. guernei*, p. 60, *coarctata*, p. 61, Azores, DAUTZENBERG, (107) 1889, figg.; *T. argentea*, *laevicostata*, *tegulata*, Port Elizabeth, SOWERBY, (378) p. 25, figg.; *T. crenulifera*, S. Australia, TATE, Tr. R. Soc. S. Austr. xv, p. 126, fig. : n. spp.
- Turritodostomia*, n. subg. of *Odostomia*, type †*O. plicata*, Mont. ; SACCO, Mem. Acc. Tor. xlii, p. 623, fig.

## SCUTIBRANCHIATA.

## RHIPIDOGLOSSA.

## PROSERPINIDÆ and HELICINIDÆ.

- Ceres*: anatomy; FISCHER & CROSSE, (133) pp. 379–381.
- Cyane orbignyi*, n. sp., Bolivia, ANCEY, Le Nat. 1892, p. 178.
- Helicina*: anatomy; FISCHER & CROSSE, (133) pp. 390–392.
- H. leucozonalis*, Brazil, *bourguignatiana*, E. Bolivia, p. 95, *lirifera*, *sulfurea*, E. Bolivia, p. 96, ANCEY, Journ. Conch. vii; *H. (Idesa) nesiotica*, Galapagos Is., DALL, Naut. v, p. 97; *H. wolfs*, Galapagos Is., REIBISCH, SB. Ges. Isis, 1892, p. 29, fig. : n. spp.
- Heudeia*: notes on the genus and its allies; CROSSE, J. de Conch. 1892, pp. 284–288, figg.

## NERITIDÆ and NERITOPSIDÆ.

- On the mode of growth and the structure of the shell in *Neritidæ*, especially in *Velates conoideus*, Lamk. ; WOODWARD, P. Z. S. 1892, pp. 528–540.
- †*Hologyra*, n. g., with *H. alpina*, *carinata*, n. spp., Alpine Trias; WOEHRMANN & KOKEN, Z. geol. Ges. xlv, pp. 193 & 194, fig.

- † *Naticopsis* (?) *ladina*, *dianae*, p. 75, *N. zitteli*, *laubei*, p. 76, *altoni*, p. 78, *gaderana*, p. 79, *kinkelini*, p. 82, *uhligi* (Klipst. MS.), *involuta*, p. 83, *telleri*, p. 84, n. spp., Trias of St. Cassian, KITTL, Ann. Hofmuseum Wien, vii, figg.
- Nerita polita* : nervous system ; BOUTAN, C.R. cxiv, p. 1133.
- Neritina picta*, Sow., note on ; CROSSE & FISCHER, J. de Conch. 1892, pp. 292 & 293.
- N. (Clithon) rhyssodes*, Is. Nossi-Bé [Madagascar], BÆRTGER, Nachr. mal. Ges. 1892, p. 57 ; *N. sargi*, Guatemala, CROSSE & FISCHER, J. de Conch. 1892, p. 296 ; *N. (Theodoxus) mixta*, Spain, WESTERLUND, Nachr. mal. Ges. 1892, p. 200, and An. Soc. Esp. xxi, p. 389 ; † *N. imitans*, Trias of St. Cassian, KITTL, Ann. Hofmuseum Wien, vii, p. 41, fig. : n. spp.
- † *Neritodonta cunici*, p. 177, *serrulata*, *lamellata*, p. 178, n. sp., Tertiary of Markuševac (Croatia), BRUSINA, Glasnik Naravosl. Društ. vii.
- † *Palaeonarica*, n. g., p. 42, type *Naticella concentrica*, Münster, *P. constricta*, p. 42, *cancellata*, p. 44, n. spp., Trias of St. Cassian, KITTL, Ann. Hofmuseum Wien, vii, figg.
- † *Platychilina*, n. g., with *P. woehrmanni*, n. sp., Alpine Trias ; WOEHRMANN & KOKEN, Z. geol. Ges. xlv, pp. 195 & 196, fig.
- † *Velates conoideus*, Lamk., structure and growth of shell ; WOODWARD, P. Z. S. 1892, pp. 528-540.

# TURBINIDÆ and TROCHIDÆ.

- Buthybembix*, Watson emend., notes on ; CROSS, J. de Conch, 1892, pp. 288-292, figg.
- Calliostoma corbis*, p. 365, *orion*, p. 367, (*Eucasta*) *indiana*, p. 368, (*Eutrochus*) *sayanum*, p. 370, *benedicti*, p. 371, *cinctellum*, p. 372, (*Dentistyla*) *sericifilum*, p. 373, Transatlantic and Caribbean, DALL, Bull. Mus. C. Z. xviii (1889) figg. ; *C. farquhari*, Port Elizabeth, SOWERBY, (378) p. 43, fig. ; † *P. jetschimi*, Rupelian of Germany, BÆRTGER, Mal. Bl. xi, p. 91 : n. spp.
- Cirsoschilus*, n. sect. of *Collonia*, type † *Delphinula striata*, Desh. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 76.
- Clanculus waltonæ*, n. sp., Port Elizabeth, SOWERBY, (378) p. 45, fig.
- Cyniscella*, n. sect. of *Collonia*, type † *Cyclostoma cornu-pastoris*, Lamk. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 79.
- Dillwynella*, n. subg. of *Ethalia* [q.v.].
- Ethalia reclusa*, p. 361, *suppressa*, *solida*, (*Dillwynella*) *modesta*, p. 362, n. spp., Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), figg.
- Eucasta*, n. sect. of *Calliostoma* [q.v.].
- Euchelus guttarosæ*, n. sp., Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), p. 382, fig.
- Gaza fischeri*, n. sp., Santa Lucia, DALL, Bull. Mus. C. Z. xviii (1889), p. 355, fig.

- Gibbula eliaduru*, p. 159, *valentini*, p. 160, Kalymos Is., BÆTTGER, Ber. Senck. Ges. 1892; *G. biporcata*, Cape Town, SOWERBY, (378) p. 67 : n. spp.
- Homalochilus*, n. sect. for †*Collonia miliaris*, n. sp., Eocene Paris; COSSMANN, Mém. Soc. Mal. Belg. 1891 (1892), p. 44.
- Margarita (Turricula) imperialis*, anatomy; DALL, Bull. Mus. C. Z. xviii (1889), pp. 376 & 377.
- M. erythrocoma*, p. 375, Caribbean, (*Turricula*) *bairdii*, p. 378, n. spp., S. California, DALL, Bull. Mus. C. Z. xviii (1889), figg.
- Monilea fritzei*, n. sp., Middle Liu-Kiu Is., BÆTTGER, Nachr. mal. Ges. 1892, p. 166.
- Norrisella*, n. sect. of *Norrisia*, type *Turbo pygmaeus*, Desh.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 62.
- †*Oncospira legayi*, n. sp., Oxfordian of Boulogne, RIGAUX, Mém. Soc. Acad. Boulogne, xiv, p. 108, fig.
- Otularz*, n. sect. of *Leptothyra*, type †*Turbo inermis*, Desh.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 72.
- Periulaz*, n. sect. of *Eumargarita*, type †*Solarium spiratum*, Lamk.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 66.
- Phasianella azorica*, n. sp., Azores, DAUTZENBERG, (107) 1889, p. 61, figg.
- Phorculus*, n. sect. of *Gibbula*, type †*Turbo fraterculus*, Desh.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 61.
- Pseudodiloma*, n. sect. of *Gibbula*, type †*Trochus mirabilis*, Desh.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 60.
- Solariella fusco-maculata*, n. sp., Port Elizabeth, SOWERBY, (378) p. 44, fig.
- Tectariopsis*, n. sect. of *Turbo*, type †*T. henrici*, Caill.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 71.
- †*Trochus demersus*, n. sp., Tertiary of Häring, DREGER, Ann. Hofmuseum Wien, vii, p. 14, fig.
- Turbo (Leptothyra) philipiana, linnei*, Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), p. 353, figg.; †*T. tuberculosus*, Tertiary of Häring, DREGER, Ann. Hofmuseum Wien, vii, p. 13, fig. : n. spp.
- Umbonium bairdii*, n. sp., Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), p. 359, figg.
- Uvanilla regina*, n. sp., West Coast U. S.; STEARNS, Naut. vi, p. 85.

#### DELPHINULIDÆ, CYCLOSTREMATIDÆ, and COCCULINIDÆ.

- Cocculina spinigera*, anatomy; DALL, Bull. Mus. C. Z. xviii (1889), p. 349.
- Cyclostrema turbinum*, p. 393, Havana, *pompholyx*, Gulf of Mexico, *cistronium*, N. Carolina, p. 394, *granulum*, Samana Bay, (*Granigyra*) *limatum*, Cuba, p. 395, DALL, Bull. Mus. C. Z. xviii (1889), figg.; *C. rotundata, inflata, planulata*, Port Elizabeth, SOWERBY, (378) pp. 45 & 46, figg. : n. spp.
- †*Delphinula parkeri*, n. sp., Oxfordian of Boulogne, RIGAUX, Mém. Soc. Acad. Boulogne, xiv, p. 107, fig.

- Listia bairdii*, p. 389, *miniata*, *variabilis*, p. 390, (*Lippistes*) *acrilla*, p. 391, *amabilis*, p. 392, n. spp., Carribbean, DALL, Bull. Mus. C. Z. xviii (1889), figg.
- Megatyloma*, n. sect. of *Tinostoma*, type †*T. wateleti*, Desh. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii, p. 50.
- Vitrinella multicarinata*, E. Coast U. S., DALL, Bull. Mus. C. Z. xviii (1889), p. 392 ; *V. williamsoni*, San Pedro Bay, DALL in WILLIAMSON, P. U. S. Nat. Mus. xv, p. 202, fig. : n. spp.

#### HALIOTIDÆ, PLEUROTOMARIIDÆ, and BELLEOPHONTIDÆ.

- Halotis*: imperforate specimen; SMITH, Conchologist, ii, pp. 75 & 76.
- Murchisonia* (*Goniostropha*) *hibernica*, *tatei*, p. 563, (*Hypergonia*) *pentonensis*, p. 569, *kirkbyi*, p. 570, *plana*, p. 571, (*Œolocaulus*?) *tuedia*, p. 572, n. spp., Carboniferous of British Is., DONALD, Q. J. Geol. Soc. xlviii, figg.
- Pleurotomaria quoyana* and *adansoniana*, description of the animal and anatomy ; DALL, Bull. Mus. C. Z. xviii (1889), pp. 397-403.
- †*P. kayseri*, n. sp., Palæozoic of Bolivia, ULRICH, (412) p. 40, fig.
- Schismope fayalensis*, n. sp., Azores, DAUTZENBERG, (107) 1889, p. 65, figg.
- †*Trematonotus britannicus*, Wenlock Beds, near Dudley, proposed as a new species ; NEWTON, Geol. Mag. 1892, p. 339 : withdrawn as a synonym of *T. dilatatus* ; NEWTON, *i. c.* p. 525.

#### FISSURELLIDÆ.

- Fissurellidæ* of the United States: catalogue of ; PILSBRY & JOHNSON, Naut. v, pp. 102-107, & 113.
- Emarginula compressa*, Cantraine, note on ; MONTEROSATO, J. de Conch. 1892, pp. 78-81.
- E. (Rimula) frenulata*, W. Florida, DALL, Bull. Mus. C. Z. xviii (1889), p. 406, fig. ; †*E. kittli*, Tertiary of Häring, DREGER, Ann. Hof-museum Wieu, vii, p. 13, fig. : n. spp.
- Entomella*, n. sect. of *Emarginula*, type †*E. clypeata*, Lam. ; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 39.
- Fissurella (Glyphis) fluviana*, n. sp., Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), p. 408, fig.
- Puncturella watsoni*, p. 403, Caribbean, *P. (?) erecta*, p. 405, n. spp., N. Carolina, DALL, Bull. Mus. C. Z. xviii (1889).
- Scutum*: note on the eye of ; PELSENEER, Bull. Soc. Mal. Belg. 1891 [1893] p. xxviii. [*S.* =] *Parmophorus australis*, figured ; BOUTAN, Rev. Biol. v, pl. ix (p. 69).

## DOCOGLOSSA.

## ACMÆIDÆ and PATELLIDÆ.

*Acmaea* : position of osphradia ; DALL, Bull. Mus. C. Z. xviii (1889), p. 410. *A. saccharina*, Linn., note on ; TAYLOR, Naut. vi, p. 89.

*Patellidæ* of Japan ; TAYLOR, Naut. vi, pp. 69 & 70.

*Patella vulgata*, respiratory globulin from the blood ; GRIFFITHS, C.B. cxv, p. 259.

## INCERTA SEDES.

† *Astralites*, n. g. for *A. fimbriatus*, n. sp., Devonian, Manitoba ; WHITEAVES, Contr. Canad. Pal. i, p. 323, fig. In some characters this genus resembles *Uvanilla*, *Onustus*, or *Pleurotomaria*, but differs in the presence of a conspicuous fold upon the columella.

## III. POLYPLACOPHORA.

Monograph begun by PILSBRY (409), who subdivides group as far as done into :—1. LEPIDOPLEURIDÆ, (*Lepidopleurus*, *Hanleya*, *Hemiarthrum*, *Microplax*). 2. CHITONIDÆ, *Ischnochitoninæ* (*Leptoplax*, *Spongiochiton*, *Chætopleura*, *Tonicella*, *Schizoplax*, *Callochiton*, *Ischnochiton*), *Chitoninæ*, and *Acanthopleurinæ*.

The integument of Chitons ; THIELE, Biol. Centralbl. xi (1891), pp. 722–726. Respiratory globulin in the blood of Chitons ; GRIFFITHS, C.B. cxv, pp. 474 & 475. Embryology of *Chiton* ; METCALF, Johns Hopk. Univ. Circ. xi, p. 79.

*Callochiton princeps*, p. 50, Hab. ?, *lobatus*, p. 53, Tasmania (Carpenter MS.), n. spp., PILSBRY in TRYON's Manual, xiv, fig.

*Chætopleura gemmea*, p. 31, Monterey, California, *armillata*, p. 39, Is. Gorriti (Carpenter MS.), n. spp. ; PILSBRY in TRYON's Manual, xiv, fig.

*Cyanoplax*, n. subg. of *Tonicella* ; PILSBRY in TRYON's Manual, xiv, p. 44.

*Ischnochiton* : PILSBRY in TRYON's Manual, xiv, divides into subgenera as follows :—*Stenochiton*, *Stenoplax*, *Ischnoplax*, *Heterozona*, *Tachydermon*, *Ischnochiton*, *Ischnoradsia*.

1. *floridanus*, p. 58, West Key, Florida, *fallax* (Carpenter MS.), p. 59, Monterey, California, *acrior* (*ib.*), p. 61, Lower California, *conspicuous* (*ib.*), p. 63, California and Lower California, *cariosus* (*ib.*), p. 65, Australia, *solidior* (*ib.*), p. 76, Philippines, *asperior* (*ib.*), p. 77, Hong Kong or Hakodade, *perornatus* (*ib.*), p. 77, hab. ?, *multidentatus* (*ib.*), p. 85, Bonin Is., *haddonii* (*ib.*), p. 88, Port Jackson, N.S.W., *bisculptus* (Carpenter MS.), p. 119, Hong Kong ?, *newcombi* (*ib.*), p. 120, Santa Catalina Is., *radians* (*ib.*), p. 121, Monterey, California, *aureotinctus* (*ib.*), p. 123, Santa Catalina Is., *decipiens* (*ib.*), p. 123, Monterey,

- California, *corrugatus* (*ib.*), p. 123, California, *cooperi* (*ib.*), p. 127, California, *sinudentatus* (*ib.*), p. 128, Monterey, California, n. spp., PILSBRY in TRYON's Manual, xiv, figg.
- Lepidopleurus rugatus*, p. 11, Lower California, *granoliratus*, p. 14, Mogador, *curvatus*, p. 16, Japan (Carpenter MS.), n. spp., PILSBRY in TRYON's Manual, xiv, figg.
- Lepidoxona*, n. sect. of subg. *Ischnochiton* (s. s.); PILSBRY in TRYON's Manual, xiv, pp. 86 & 125 [at first, p. 55, given as sect. of subg. *Ischnoradsia*].
- Leptochiton pergranatus*, n. sp., Dominica, DALL, Bull. Mus. C. Z. xviii (1889), p. 414.
- Notoplax floridanus*, n. sp., Florida Keys, DALL, Bull. Mus. C. Z. xviii (1889), p. 416.
- Radsialla*, n. sect. of subg. *Ischnochiton* (s. s.); PILSBRY in TRYON's Manual, xiv, pp. 54 & 86.
- Spongiochiton productus* (Carpenter MS.), n. sp., New Zealand, PILSBRY in TRYON's Manual, xiv, p. 26, fig.

#### IV. APLACOPHORA.

- Chatoderma nitidulum*, Lovén: histological notes; WIRÉN, Biol. Fören. Förhandl. iii (1890), pp. 37-49.
- Proneomenius sluiteri*: anatomy and histology; HEUSCHER, Viert. Ges. Zurich, xxxvii, pp. 148-161, figg.; *P. aglaopheniae*, embryogeny of; PRUVOT, C.R. cxiv, pp. 1211-1214.

#### V. SCAPHOPODA.

- Structure and relationship of the *Solenocoencha*: anatomy of *Dentalium dentale*, and notes on that of *Siphonentalis affinis* and *Cadulus subfusiformis*; PLATE, Zool. JB. v, Anat. pp. 301-386, figg.: also *id.* Verh. Deutsch. Zool. Ges. i (1891), pp. 60-63. [For conclusions as to the phylogenetic relationships, see *ante*, p. 36.]
- Cadulus acus*, fig., San Domingo, *minusculeus*, Cape Hatteras, n. spp., DALL, Bull. Mus. C. Z. xviii (1889), p. 432.
- Dentalium*: notes on its organization; PLATE, SB. Ges. Marb. 1890 (1891), pp. 26-29.
- D. callipeplum*, p. 419, *matara*, p. 420, *calamus*, p. 421, *taphrium*, p. 422, *carduus*, p. 423, *gouldii*, p. 424, *callithrix*, p. 427, Transatlantic and Caribbean, DALL, Bull. Mus. C. Z. xviii (1889), figg.; †*D. haeringense*, Tertiary of Häring, DREGER, Ann. Hofmuseum Wien, vii, p. 12, fig. : n. spp.
- Læidentalium*, n. sect. of *Dentalium*, type †*D. incertum*, Desh.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 11.
- Lobantale*, n. sect. of *Dentalium*, type †*D. duplex*, DeFr.; COSSMANN, Cat. Coqu. Foss. Eocene Paris, iii (1888), p. 11.

## VI. PELECYPODA.\*

New classification proposed by GROBBEN (163, 164).—Some notes on the morphology of the *Pelecypoda*; KELLOG, Johns Hopk. Univ. Circ. xi, pp. 80–83.—On the margin of the mantle of *Acephala siphoniata*; RAWITZ, Jen. Z. Nat. xxvii, pp. 1–232, figg.—On the phylogeny of the *Byassus-apparatus*; THIELE, Verh. Deutsch. Zool. Ges. ii, pp. 52–57.

## SEPTIBRANCHIATA.

Anatomy of the *Septibranchiata* discussed; DALL, Bull. Mus. C. Z. xviii (1889), pp. 441–452.

*Cuspidaria (Neaera) cuspidata*, Olivi, structure; GROBBEN, Arb. z. Inst. Wien, x, No. 3, pp. 1–31, figg.

## EULAMELLIBRANCHIATA.

## ANATINACEA.

† *Allorisma* re-defined; GOODCHILD, P. Phys. Soc. Edinb. xi, pp. 245 & 246.

*Ectorisma*, n. g., closely related to *Pholadomya*, for *E. granulata*, n. sp., S. Australia; TATE, Tr. R. Soc. S. Austr. xv, p. 127, fig.

*Pandora (Kennerlia) bushiana*, n. sp., Florida, DALL in SIMPSON, P. Davenport Ac. v (1889), p. 71.

† *Pholadomya elegantula*, n. sp., Pliocene of Savena, near Bologna, FORESTI, Bull. Soc. Mal. Ital. xvi, p. 81, fig.

† *Pleuromya gottschei*, n. sp., Inf. Oolite of the Argentine Cordilleras, BEHRENDSEN, Z. geol. Ges. xlv, p. 11, fig.

† *Thracia aequilatera*, n. sp., Neocomian of the Argentine Cordilleras, BEHRENDSEN, Z. geol. Ges. xlv, p. 21, fig.

## PHOLADACEA.

Monograph by CLESSIN, pp. 25–40 & pls. vii–xii; MARTINI & CHEMNITZ (246).

† *Aspidopholus stainieri*, n. sp., Tertiary of Antwerp, VINCENT, Bull. Soc. Mal. Belg. 1891 [1893], p. lxxxvii, fig.

† *Jouannetia cochlearella*, n. sp., Eocene of Belgium, VINCENT, Mem. Soc. Mal. Belg. 1891 [1893], p. 166.

*Pholas dactylus*: anatomy and physiology; DUBOIS, Ann. Univ. Lyon, ii, fasc. 2.

*Pholadida*, from the Eocene of Belgium; VINCENT, Mem. Soc. Mal. Belg. 1891 [1893], pp. 164–168.

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\* Arranged according to Pelseneer's scheme, vide WOODWARD, Ann. N. H. xi, p. 158.

## MYACEA.

- †*Corbula bodenbenderi*, p. 19, *inflata*, *nana*, p. 20, n. spp., Neocomian of the Argentine Cordilleras, BEHRENDSEN, Z. geol. Ges. xlv, figg.

## CARDIACEA.

- Ceratoconcha*, n. g. for *C. costata*, n. sp., Tertiary of Agram; GORJANOVIC-KRAMBERGER, Glasnik Naravosl. Druzt. iv (1889), p. 50, fig.
- Chama nicolloni*, n. sp., West Coast of France, DAUTZENBERG, Bull. Soc. Ouest France, ii, p. 133, figg.
- †*Cornucaprina*, n. g., for *Schiosia carinata*, G. Böhm; FUTTERER, Pal. Abh. vi, p. 87, fig.
- †*Limnocardium jagici*, p. 186, *kosici*, p. 188, *margaritaceum*, p. 190, n. spp., Tertiary of Markuševac (Croatia); BRUSINA, Glasnik Naravosl. Druzt. vii.
- †*Orthoptychus*, n. g., for *O. striatus*, n. sp., Upper Cretaceous of the Venetian Alps; FUTTERER, Pal. Abh. vi, p. 91, figg.
- †*Schiosia*, n. sect. for *S. schiosensis*, n. sp., Cretaceous of the Venetian Alps; BOEHM, Ber. Ges. Freiburg, vi, p. 11, with other new species of *Caprinidae*.
- Sphærium nyanzae*, n. sp., Victoria Nyanza, SMITH, Ann. N. H. x, p. 383.

## VENERACEA.

- †*Conchodus*: notes on the genus, with *C. schwageri*, n. sp., Upper Trias of the Northern Alps; TAUSCH, Abh. Geol. Reichsanst. xvii, No. 1, 8 pp., 3 pls.
- Corbicula trajecta*, n. n. for *C. tongkingensis*, Clessin; FISCHER, Bull. Soc. Autun, iv, p. 240.
- †*Cyprina argentina*, n. sp., Neocomian of the Argentine Cordilleras; BEHRENDSEN, Z. geol. Ges. xlv, p. 22, fig.
- Cytherea conveza*, Say, preocc. by Brongniart, for a Paris Basin species; *C. sayana*, Conrad, stands; DALL, Naut. vi, p. 52.
- C. gracilentia*, *rugata*, *nitidula*, n. spp.?, W. Coast of France, LOCARD, Échange, vii (1891), p. 69.
- †*Isocardia koeneni*, n. sp., Neocomian of the Argentine Cordilleras, BEHRENDSEN, Z. geol. Ges. xlv, p. 22, fig.
- Isocardiidae*, n. n. for *Cyprinidae*; BUCQUOY & others, (55) p. 313.
- Meroë ovalis*, n. sp., Port Elizabeth, SOWERBY, (378) p. 59, fig.
- †*Pachyerisma*: on the scar of the pedal muscle; BOEHM, Ber. Ges. Freiburg, vi, pp. 119 & 120.
- Petricola ponsonbyi*, n. sp., Port Elizabeth, SOWERBY, (378) p. 61, fig.
- †*Ptychomya koeneni*, n. sp., Neocomian of the Argentine Cordilleras, BEHRENDSEN, Z. geol. Ges. xlv, p. 23, fig.



## TELLINACEA.

- Donax bipartitus*, n. sp., South Africa, SOWERBY, (378) p. 58, fig.  
*Herouvalia* defined; COSSMANN, Mem. Soc. Mal. Belg. 1891 (1892), p. 28.  
*Mactra*: on the systematic position of *Mactra* and its allies; BITTNER,  
 Verh. geol. Reichsanst. 1892, pp. 232-241.  
*Mactra capensis*, n. sp., Port Elizabeth, SOWERBY, (378) p. 55, fig.  
*Syndosmya schneideri*, n. sp., Borkum Is., BËTTGER in SCHNEIDER,  
 Nachr. mal. Ges. 1892, p. 116.  
*Tellina (Macoma) crawfordi, rousi*, n. spp., Port Elizabeth, SOWERBY,  
 (378) p. 57, figg.

## SUBMYTILACEA.

(*Marine Forms.*)

- † *Anthracosia venjukowi*, p. 155, *subnucleus*, p. 156, *loewinsoni*, p. 157, *oviformis*, *truncata*, *obscura*, p. 158, n. spp., Permian of Russia, AMALIZKY, Palæontogr. xxxix, figg.  
 † *Carbonicola subovalis*, p. 146, *striata*, p. 148, *substegocephalum*, p. 149, *recta*, *indeterminatus*, p. 150, *nova*, p. 152, n. spp., Permian of Russia, AMALIZKY, Palæontogr. xxxix, figg.  
*Cardita elata*, Port Elizabeth, SOWERBY, (378) p. 63, fig.; *C. gemmulifera*, S. Australia, TATE, Tr. R. Soc. S. Austr. xv, p. 130, fig.: n. spp.  
*Carditella rugosa*, n. sp., South Africa, SOWERBY, (378) p. 63, fig.  
*Felania subradiata*, n. sp., Port Elizabeth, SOWERBY, (378) p. 62, fig.  
*Lucina per-obliqua*, p. 128, *paupera*, p. 129, n. spp., S. Australia, TATE, Tr. R. Soc. S. Austr. xv, figg.  
 † *Myoconcha parvula*, n. sp., Alpine Trias, WOEHRMANN & KOKEN, Z. geol. Ges. xliv, p. 177, fig.  
*Mysella ovalis*, n. sp., S. Australia, TATE, Tr. R. Soc. S. Austr. xv, p. 128, fig.  
*Neocardia*, n. g. for *N. agulata*, n. sp., Port Elizabeth, SOWERBY, (378) p. 63, fig.  
 † *Opis pellati*, n. sp., Oxfordian of Boulogne, RIGAUX, Mém. Soc. Acad. Boulogne, xiv, p. 107, fig.  
 † *Plethocardia*, n. g. for *P. umbonata* and *suberecta*, n. spp.; ULRICH, Rep. Geol. Surv. Minnesota, No. 19, pp. 243-245, figg.  
*Tellimyia producta*, n. sp., St. Helena, SMITH, Ann. N. H. x, p. 130.  
 † *Trigonodus costatus*, p. 186, *minutus*, p. 187, n. spp., Alpine Trias, WOEHRMANN & KOKEN, Z. geol. Ges. xliv, figg.

(*Freshwater Forms.*)

## UNIONIDÆ and DREISSENIIDÆ.

- Anodonta*: notes on; JHERING, Zool. Anz. xv, pp. 1-5.  
*A. chapalensis*, Mexico, CROSSE & FISCHER, J. de Conch. 1892, p. 295;  
*A. græca*, p. 90, *quellenneci*, p. 91, *lepida*, p. 92, Lake Copais, Greece,

- lhotellerii*, Belgium, DROUET, J. de Conch. 1892; *A. recurvirostris*, (Küster MS.) *gallensteini*, Carinthia, KOBELT in ROSSMAESSLER, (322) vi, p. 47, figg. : n. spp.
- Congeria* and *Dreissensia*, their relationship and distribution in space and time; OPPENHEIM, Z. geol. Ges. xliii, pp. 923-966, 1 pl. *C. triangularis*, notes on the group; BRUSINA, Z. geol. Ges. xliv, pp. 488-497.
- † *C. harnesi*, p. 492, *ornithopsis*, p. 495, BRUSINA, Z. geol. Ges. xliv; † *C. mytilopsis*, *ramphora*, p. 182, *doderleini*, p. 183, *gitneri*, p. 184, Tertiary of Markuševce, BRUSINA, Glasnik Naravoel. Druzt. vii : n. spp.
- Cristaria* [= *Dipsas*], note on; JHERING, Nachr. mal. Ges. 1892, pp. 1-14.
- Dipsas plicata*, Lea: anatomy; ISHIKAWA (192A).
- Dreissensia* and *Congeria*, their relationship and distribution in space and time; OPPENHEIM, Z. geol. Ges. xliii, pp. 923-966, 1 pl. *Dreissena* [n] *polymorpha*, development; KORSCHULT, Ann. N. H. ix, pp. 157-169, figg.
- D. massiei*, n. sp., Laos, MORLET, J. de Conch. 1892, p. 85.
- † *Dreissensidae*: fossil species of Dalmatia, Croatia, and Slavonia; BRUSINA, Glasnik Naravoel. Druzt. vii, pp. 195-199.
- Glabaris*: notes on; JHERING, Zool. Anz. xv, pp. 1-5.
- Margaritana margaritifera*, Linn., notes on a specimen of; MOEBIUS, SB. nat. Fr. 1892, p. 92.
- † *Najadites verneuili*, p. 187, *fischeri*, *subcastor*, p. 191, *okensis*, p. 193, *parallela*, *sibirzevi*, p. 194, *indeterminata*, *dubia*, *monstrum*, p. 195, n. spp., Permian of Russia; AMALIZKY, Palæontogr. xxxix, figg.
- † *Oligodon*, n. g., p. 179, for *O. kingi*, p. 181, *geinitzi*, *zitteli*, p. 182, n. spp., Permian of Russia, AMALIZKY, Palæontogr. xxxix, figg.
- † *Palæomutela*, n. g., p. 159, for *P. verneuili*, p. 163, *subparallela*, *solenoides*, p. 164, *trapezoidalis*, *compressa*, p. 165, *lunulata*, *semi-lunulata*, p. 166, *keyserlingi*, p. 168, *orthodonta*, *ovalis*, p. 169, *subovulis*, *trigonalis*, p. 170, *irregularis*, *golowkinskiana*, p. 171, *rectangularis*, *obliqua*, *triangularis*, p. 174, *vaga*, *parva*, p. 175, *elegantissima*, p. 176, *murchisoni*, *plana*, *lævis*, p. 177, *crassa*, *gorbatowi*, p. 178, *curiosa*, p. 179, n. spp., Permian of Russia, AMALIZKY, Palæontogr. xxxix, figg.
- Pseudodon crassus*, *ceneolus*, Borneo; DROUET & CHAPER, Mém. Soc. Zool. v, pp. 151 & 152, figg. (see also J. de Conch. 1892, pp. 93 & 94).
- Spatha subaequilatera*, n. sp., Victoria Nyanza, MARTENS, Conch. Mittheil. iii (1889), p. 18, fig.
- Spathella bloyeti*, p. 198, *spathuliformis*, p. 199, E. Centr. Africa, n. spp., BOURGUIGNAT, (37) 1889, figg.
- Unionidae*: on a revision of the American *Unionidae*; SIMPSON, Naut. vi, pp. 78-80: preliminary list of New York species; MARSHALL, Bull. New York Mus. Nat. Hist. i, 17 pp. *Unionidae* of New York State; MARSHALL, Bull. New York Mus. Nat. Hist. i, No. 1. *Unionidae* of Spoon River, Illinois; STRODE, Am. Nat. xxvi, pp. 495-501.

- Unio* : variability of the Tasmanian ; JOHNSTON, P. R. Soc. Tasm. 1888 (1889), pp. 95 & 96.
- U. luteolus* and *radiatus*, more notes on ; DEAN, Naut. v, p. 112. *U. vagulus*, n. n. for *U. subtrigonus*, Sow., non Deshayes ; FISCHER, Bull. Soc. Autun. iv, p. 223. *U. quintardii*, Cragin, *pilsbryi*, Marsh, and (*Arconaia*) *provancheriana*, Pilsbry, figured ; PILSBRY, P. Ac. Philad. 1892, pp. 131 & 132, 2 pls.
- U. usumasintæ*, *yzabalensis*, Guatemala, CROSSE & FISCHER, J. de Conch. 1892, pp. 294 ; *U. corbeti*, Lake Kaudy, Ceylon, DESCHAMPS, Bull. Soc. Z. Fr. xvii, p. 68, fig. ; *U. serradelli*, Philippines, p. 86, *helenæ*, Corfu, p. 87, *thiesseæ*, Greece, p. 88, *clessini*, Danube [*i.e.* the Douau] at Lauingen, p. 89, DROUET, J. de Conch. 1892 ; *U. lugens*, p. 147, *sacculus*, p. 148, *lingulatus*, p. 149, *radulosus*, p. 150, *trompi*, p. 153, *fulvaster*, p. 154, Borneo, DROUET & CHAPER, Mém. Soc. Z. Fr. vi, figg. ; *U. dugasti*, Laos, MORLET, J. de Conch. 1892, p. 86 ; *U. subluridus*, Orange Springs, Volusia County, Florida, SIMPSON, P. U. S. Nat. Mus. xv, p. 432, fig. : n. spp.

## PSEUDOLAMELLIBRANCHIATA.

### OSTREIDÆ and AVICULIDÆ.

- † *Avicula kokeni*, n. sp., Alpine Trias, WOEHRMANN & KOKEN, Z. geol. Ges. xlv, p. 175, fig.
- † *Cleionychia*, n. g., type *Ambonychia lamellosa*, Hall, with *C. rhomboidea*, n. sp., Treuton Limestone of U. S. ; ULRICH, Am. Geol. x, p. 97, fig.
- † *Lithotis problematica*, Gumb., notes on ; BOEHM, Ber. Ges. Freiburg, vi, pp. 65-80, figg.
- † *Maccoyella*, n. g., type *Avicula barklyi*, Moore, Rolling Downs formation of Queensland ; JACK & ETHERIDGE, (193) p. 451, fig.
- † *Merismopteria*, n. g., type *Pterinea macroptera*, from the Permo-Carboniferous of Queensland ; JACK & ETHERIDGE, (193) p. 271, fig.
- Ostrea* : notes on oysters ; SCHIELDT (334, 335, 336).
- † *Perna nana*, n. sp., Inferior Oolite of the Argentine Cordilleras, BEHRENDSEN, Z. geol. Ges. xlv, p. 11, fig.
- † *Pinna tomassi*, n. sp., Alpine Trias, WOEHRMANN & KOKEN, Z. geol. Ges. xlv, p. 177, fig.
- † *Posidonomya steinmanni*, n. sp., Inferior Oolite of the Argentine Cordilleras, BEHRENDSEN, Z. geol. Ges. xlv, p. 10, fig.
- † *Pseudavicula*, n. g., type *Lucina anomala*, Moore, from the Rolling Downs Beds of Queensland ; JACK & ETHERIDGE, (193) p. 449, fig.

### PECTINACEA.

- Amusium dalli* : gill structure ; DALL, Bull. Mus. C. Z. xviii (1889), p. 433.
- † *Dellopecten*, n. g., type *Pecten illawarensis*, Morris, intermediate between

- Pecten* and *Aviculopecten*, from the Permo-Carboniferous of Queensland ; JACK & ETHERIDGE, (193) p. 269, fig.  
*Dimya argentea* : gill structure ; DALL, Bull. Mus. C. Z. xviii (1889), p. 433.  
*Pecten crouchi*, Mauritius, SMITH, Ann. N. H. ix, p. 255, fig. ; †*P. zitteli*, Alpine Trias, WOEHRMANN & KOKEN, Z. geol. Ges. xlv, p. 173, fig. : n. spp.  
*Spondylus gæderopus*, L., disappearance from Maltese Waters ; CARUANA-GATTO, Med. Nat. i, p. 165.  
*S. powelli*, n. sp., Madeira, SMITH, Journ. Conch. vii, p. 70.

### FILIBRANCHIATA.

- Anomiidae* of the Coast of France, with *Anomia boletiformis*, n. sp. [?] ; LOCARD, Échange, vii (1891), p. 86.  
*Arca ectocomata* : gill structure ; DALL, Bull. Mus. C. Z. 1889, p. 433.  
*Barbatia helblingia* : foot and byssus glands figured ; SLUITER, Tijdschr. Nederl. Dierk. Ver. iii, pp. 170-184.  
*Lithodomus dactylus*, on the boring powers of ; CARAZZI, Atti Soc. Ligust. iii, p. 279-297, fig.  
*L. projectans, cuneiformis*, S. Australia, n. spp., TATE, Tr. R. Soc. S. Austr. xv, pp. 131 & 132, figg.  
†*Myophoria* (?) *plana*, n. sp., Alpine Trias, WOEHRMANN & KOKEN, Z. geol. Ges. xlv, p. 183, fig.  
*Myrina crenatulifera*, n. sp., S. Australia, TATE, Tr. R. Soc. S. Austr. xv, p. 131, fig.  
*Pectunculus* : species living in the Mediterranean and fossil in the Upper Tertiary strata of Italy ; GREGORIO, Nat. Sicil. xi, pp. 89-96, 106-114, & 209-212 ; MONTEROSATO, t. c. pp. 143-155.  
†*Schizodus negrii*, n. sp., Trias of Balia, Asia Minor, BITTNER, JB. Geol. Reichsanst. xlii, p. 86, fig.  
†*Trigonia densestriata*, Inferior Oolite of the Argentine Cordilleras, BEHRENDSEN, Z. geol. Ges. xlv, p. 12, fig. ; †*T. transatlantica*, p. 27, *anguste-costata*, p. 28, Upper Cretaceous of the Argentine Cordilleras, BEHRENDSEN, Z. geol. Ges. xlv, figg. ; †*T. seeleyi*, Lower Oolites of Boulogne, RIGAUD, Mém. Soc. Acad. Boulogne, xiv, p. 106, fig. : n. spp.

### PROTOBRANCHIATA.

- Nucula* : list of species belonging to the subgenus *Acila* ; SMITH, Journ. Conch. vii, pp. 110-112.  
*N. (Acila) fultoni*, n. sp., Bay of Bengal, SMITH, Journ. Conch. vii, p. 111.

- †*Nuculites beneckeï*, p. 46, *kruegeri*, p. 48, n. spp., Palæozoic of Bolivia, ULRICH (412), figg.  
†*Palæoneilo forbesi*, n. sp., Palæozoic of Bolivia, ULRICH, (412), p. 42, fig.  
†*Yoldia beyrichi*, n. sp., Rupelian of Germany, BÆTTGER, Mal. Bl. xi, p. 92.
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## INCERTA SEDES.

- †*Amnigenia rhenana*, n. sp., Middle Devonian of Germany, BEUSHAUSEN, JB. Preuss. geol. Landesanst. xi, Abhandl. p. 1, fig.

## VIII. BRACHIOPODA.

BY

B. B. WOODWARD, F.G.S., F.R.M.S., &c.

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### I.—TITLES.\*

1. BEECHER, C. E. Development of the *Brachiopoda*. Pt. II. Classification of the stages of growth and decline. Am. J. Sci. xliv, pp. 133-154, 1 pl.
2. ——. Ueber die Entwicklung der Brachiopoden. JB. Mineral. 1892, i, pp. 178-197, 1 pl.  
Translation of article in Am. J. Sci. 1891. See Zool. Rec. 1891.
3. BIERBAUER, B. A Check-list of the Palæozoic Fossils of Wisconsin, Minnesota, Iowa, Dakota, and Nebraska. Bull. Minnesota Acad. iii. [*Brachiopoda*, pp. 226-234.]
4. BITTNER, A. Neue Arten aus der Trias von Balia in Kleissasien. JB. geol. Reichsanst. xlii, pp. 77-89, 2 pls.
5. ——. Brachiopoden der Alpinen Trias. Nachtrag i. Abh. geol. Reichsanst. xii, No. 2, 38 pp., 4 pls.
6. BLOCHMANN, F. Ueber die Anatomie und die verwandtschaftlichen Beziehungen der Brachiopoden. Arch. Ver. Mecklenb. xlv, pp. 37-50.
7. ——. Untersuchungen über den Bau der Brachiopoden. 1. Die Anatomie von *Crania anomala*, O. F. M. Jena: 1892, 4to, 65 pp., 7 pls.

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\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

8. BOESE, E., & FINKELSTEIN, H. Die mittelljurassischen Brachiopoden-Schichten bei Castel Tesino im östlichen Südtirol. Z. geol. Ges. xlv, pp. 265-302.

*Brachiopoda* begin p. 285.

9. CALVIN, S. Two unique *Spirifers* from the Devonian Strata of Iowa. Bull. Lab. Iowa, ii, pp. 165-167, 1 pl.
- CLARKE, J. M. [See HALL & CLARKE (17).]
10. CRANE, MISS A. Recent observations on the anatomy and development of the *Brachiopoda*. Nat. Sci. 1892, pp. 603-611.
11. DERBY, O. A. Nota sobre a geologia e paleontologia de Matto Grosso. [*Brachiopoda* with *Notothyris* (?) *smithii* and *Centronella margarida*, n. spp.] Arch. Mus. R. Jan. ix, pp. 59-88.
12. ETHERIDGE, R., JUN. On the occurrence of an *Orthis* [*O. leviensis*], allied to *O. actonia*, J. de C. Sby., and *O. flabellulum*, J. de C. Sby., in the Lower Silurian rocks of Central Australia. In BROWN Reports on the Coal-bearing area near Leigh's Creek [Govt. Rept.], 1891, pp. 13 & 14, figg.
13. —. The *Pentamerida* of New South Wales. Rec. Geol. Surv. N.S.W. iii, pp. 49-60, 2 pls.
- FINKELSTEIN, H. [See BOESE & FINKELSTEIN (8).]
14. FISCHER, P., & EHLERT, P. Mission scientifique du Cap Horn (1882-83)—*Brachiopodes*. Bull. Soc. Antun, v, pp. 254-334, 5 pls., text illust.
15. — & —. *Brachiopodes de l'Atlantique Nord*. [Fasc. iii of Résultats des campagnes scientifiques accomplies sur son yacht par le ... Prince de Monaco.] Monaco : 1892, 4to, 30 pp., 2 pls.
16. — & —. Sur l'évolution de l'appareil branchial de quelques *Brachiopodes*. C.R. cxv, pp. 749-751.
17. HALL, J., & CLARKE, J. M. An introduction to the study of the genera of Palæozoic *Brachiopoda*. Pt. I. Geol. Surv. State of New York. Palæontology viii, pp. xvi & 367, 41 pls.
18. JOHNSTON, R. M. Additions to the list of Tasmanian Fossils [*Brachiopoda*] of Upper Palæozoic age. P. R. Soc. Tasm. 1889 (1890), pp. 137-141, 1 pl.
19. JOUBIN, L. Recherches sur l'anatomie de *Waldheimia venosa*, Sol. Mém. Soc. Zool. v, pp. 554-583, figg.
20. KAYSER, E. Beiträge zur Kenntniss der Fauna der Siegenschen Grauwacke. JB. k. preuss. geol. Landesanst. 1890, pp. 95-107, 5 pls.
21. MATTHEW, G. F. *Trematobolus*: an articulate *Brachiopod* of the inarticulate Order. Can. Rec. v, pp. 276-279, fig.

22. NEWTON, R. B. On the occurrence of *Ohonetes pratti*, Davidson, in the Carboniferous rocks of Western Australia. Geol. Mag. 1892, pp. 468, 469, & 542-544, 1 pl.  
     EHLERT, D. P., & FISCHER, P. [See FISCHER & EHLERT (14-16).]
23. RIGAUX, E. Notice géologique sur le Bas Boulonnais. Mém. Soc. Acad. Boulogne, xiv [n. spp. described on pp. 102-108, 2 pla.].
24. ROTHPLETZ, A. Die Perm-, Trias- und Jura-formation auf Timor und Rotti im Indischen Archipel. Paläontogr. xxxix, Permian *Brachiopoda*, pp. 76-85, figg.
25. SCHELLWIEN, E. Die Fauna des Karnischen Fusilinenkalks . . . Thl. I. . . *Brachiopoda*. Paläontogr. xxxix, pp. 1-56, 8 pla.  
     SCHUCHERT, C. [See WINCHELL & SCHUCHERT (31).]
26. SIMPSON, G. B. Descriptions of new species of fossils from the Clinton . . . and Waverley groups, &c. Tr. Am. Phil. Soc. xvi (1890) [*Brachiopoda*, pp. 437-445, figg.]
27. SOWERBY, G. B. Marine shells of South Africa, &c. 4to, London. [6 spp. enumerated at p. 67.]
28. ULRICH, A. Paläozoische Versteinerungen aus Bolivien. Steinmann's Beitr. Geol. Paläont. S. Amer. i, 116 pp., 5 pla. Stuttgart : 1892, 8vo.
29. WALKER, J. F. The discovery of *Terebratulina substriata*, Schlotheim, in Yorkshire. Geol. Mag. 1892, p. 364.
30. —. On Yorkshire *Thecidea*. T. c. p. 548.
31. WINCHELL, N. H., & SCHUCHERT, C. Preliminary descriptions of new *Brachiopoda* from the Trenton and Hudson River groups of Minnesota. Am. Geol. ix, pp. 284-294.

## II.—ANATOMY, &c.

Anatomy and relationships of the *Brachiopoda* ; BLOCHMANN (6), who considers them closely related to *Phoronis*.—Recent observations on the anatomy and development of the *Brachiopoda* [a summary]; CRANE (10).—Anatomy of *Orania anomala*, O.F.M.; BLOCHMANN (7).—Anatomy with figg. of *Wuldehemia venosa*, Solander ; JOUBIN (19).

Development of *Brachiopoda*, stages of growth and decline ; BECKER (1).

Evolution of the branchial apparatus of *Brachiopoda* ; FISCHER & EHLERT (16).

Observations on the characters of the shells of Palæozoic *Brachiopoda*, and such structures in the recent forms as throw light upon them are given in HALL & CLARKE (17).



## III.—DISTRIBUTION.

## A.—GEOGRAPHICAL.

English Channel : *Brachiopoda* off the Coast of the Department of the Somme ; BIZET, Mém. Soc. L. N. Fr. viii, pp. 390–392.

North Atlantic forms ; FISCHER & EHLERT (15).

South Africa : 6 species recorded from ; SOWERBY (27).

Australia : third supplement to list of Paliobranchs ; TATE (see *ante*, *Moll.* 399A).

Cape Horn species ; FISCHER & EHLERT (14).

## B.—GEOLOGICAL.

Summary of the palæontology of 1890, *Brachiopoda* by D. P. EHLERT, Ann. Géol. univ. Paris, 1890 (1892), pp. 1025–1039.

Fossil types in the Bath Museum, P. Bath N. H. Soc. vii, pp. 279–281.

Tertiary species from Queensland, 1 n. sp., JACK & ETHERIDGE, (*ante*, *Moll.* 193) pp. 561–574.

Eocene *Brachiopoda*, from the environs of Paris ; Mem. Soc. Mal. Belg. 1891, pp. 15–20.

Secondary *Brachiopoda*, from the Balkans, with new species ; VANKOV, Rad. jugoslav. akad. cxi, pp. 92 & 93.—Secondary *Brachiopoda*, from Queensland and New Guinea, with new species ; JACK & ETHERIDGE, (*ante*, *Moll.* 193) pp. 442–444.

Cretaceous *Brachiopoda* of Schleswig-Holstein ; STOLLY, MT. min. Inst. Kiel, i, pp. 245–248.—Upper Senonian *Brachiopoda* of the Eifel ; VOGEL, Verh. Ver. Rheinl. xlix, pp. 87–90.—3 species quoted from the Cretaceous of the Podol'ski Government ; RADKEVICH, Zapiski Kiev, xi (1891) p. 83.

Jurassic *Brachiopoda* of Yorkshire, List ; FOX-STRANGWAYS, Mem. Geol. Surv. U. K. Jurassic Rocks, vol. ii, pp. 40–45, 148–150, & 201–204.—Middle Jurassic *Brachiopoda* from Castel Tesino, in S. E. Tirol ; BOESE & FINKELSTEIN (8).—*Rhynchonella pellati*, n. sp., Oxfordian of Boulogne ; RIGAUX (23).

Liassic *Brachiopoda* from the Ironstone, near Helmstedt, with new species ; WOLLEMAN, Verh. Ver. Rheinl. xlix, pp. 125–146.

Triassic *Brachiopoda* of the Duchy of Sachsen-Altenburg ; GEINITZ, MT. Osterlande, v, pp. 189 & 190.—Triassic species from the Alps, with many new forms, and *Dinarella*, n. g. ; BITTNER (4).—*Waldheimia bukovskii*, *Spiriferina moscai*, and *Spirigera tricuspii*, n. spp., Trias of Balia, Asia Minor ; BITTNER (5).

Palæozoic *Brachiopoda* of the State of New York (*Inarticulata* and *Articulata*, *Orthis* to *Productus*), with many new genera and new species ; HALL & CLARKE (17).—Check-list of the Palæozoic *Brachiopoda* from Wisconsin, Minnesota, Iowa, Dakota, and Nebraska ; BIERBAUER (3).—New *Brachiopoda* from the Palæozoic of Boulogne ; RIGAUX (23).—Permian and Devonian *Brachiopoda* of the Duchy of Sachsen-Altenburg ;

GEINITZ, MT. Osterlande, v, pp. 169, 177 & 178.—Upper Palæozoic *Brachiopoda* of Tasmania; JOHNSTON (18).—Middle Devonian and Permo-Carboniferous species from Queensland, with new and indeterminate species; JACK & ETHERIDGE (*ante*, Moll. 193) pp. 64-68, 225-264.

Permian *Brachiopoda* from Timor and Rotti, with new species; BOTH-PLETZ (24).

Carboniferous: *Brachiopoda* of the Carinthian Fusilina Limestone, with many new species; SCHELLWIEN (25).—Grauwacke Fauna of Siegen, with *Discina*, 2 new species; KAYSER, JB. k. preuss. geol. Landesanst. xi, Abhandl. pp. 95-107, figg.—*Chonetes pratti* from the Carboniferous of W. Australia; NEWTON (22).

Devonian *Brachiopoda* of the Eastern Alps, with new species; FRECH, Z. geol. Ges. xliii, pp. 672-680.—Devonian *Brachiopoda* from Matto Grosso: *Notothyris* (?) *smithii* and *Centronella* (?) *margarida*, n. spp.; DERBY (11).—Devonian of Bolivia, with 7 new species; ULRICH (28).—Devonian species from Manitoba, with 2 new species; WHITEAVES, Contr. Canad. Pal. i, pp. 281-291, figg.—9 new species from the Clinton, Lower Helderberg, Chemung and Waverley Groups of Pennsylvania: SIMPSON (26).—*Spirifer urbana* and *macbridei*, from the Devonian of Iowa, figured by CALVIN (9).—*Terebratulula iowensis*, n. sp., Devonian, Iowa; CALVIN, Bull. Lab. Iowa, i, p. 174, fig.—Fauna of the St. John Group, Canada, with new species of *Brachiopoda*; MATTHEW, Tr. R. Soc. Canada, ix (4), pp. 39-50.—*Trematobolus*, n. g., St. John Group, New Brunswick; MATTHEW (21).—Lower Devonian *Brachiopoda*, with 4 new species; BÉCLARD, Bull. Soc. Belg. Géol. v, pp. 96-102, figg.

Siluro-Devonian *Pentameridae* of Australia; ETHERIDGE (13).

Silurian: New species from the Trenton and Hudson River Groups of Minnesota, with *Hullina*, n. g., WINCHELL & SCHUCHERT (31).—*Orthis leviensis*, n. sp., and *flabellulum*, J. de C. Sby., from the Lower Silurian of Central Australia; ETHERIDGE (12).

Cambrian fossils of S. Australia, with *Orthisina compta* and *Orthis* (?) *peculiaris*, n. spp.; TATE, Tr. R. Soc. S. Austr. xv, p. 185.

#### IV.—SYSTEMATIC.

##### INARTICULATA.

† *Barroisella*, n. g., type *Lingula subspatula*, Meek & W.; HALL & CLARKE, (17) p. 62, figg.

*Crania anomala*, O.F.M., anatomy; BLOCHMANN (7).

*Discina siegenensis*, p. 95, *anomala*, p. 96, n. spp., Grauwacke of Siegen, KAYSER, JB. k. preuss. geol. Landesanst. 1890, figg.

† *Discinopsis*, n. g., type *Acrotreta* ? *gulielmi*, Matth.; HALL & CLARKE, (17) p. 105, figg.

† *Lindstramella*, n. subg. of *Discina*, type *L. aspidum*, n. sp., Palæozoic of New York State; HALL & CLARKE, (17) p. 134, figg.

- †*Æhlertella*, n. subg. of *Discina*, type *D. pleurites*, Meek ; HALL & CLARKE, (17) p. 133.  
 †*Boemerella*, n. subg. of *Discina*, type *D. grandis*, VANUX.; HALL & CLARKE, (17) p. 137, fig.  
 †*Tomasina*, n. g., type *Lingula crisi*, DAY.; HALL & CLARKE, (17) p. 65, figg.

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†*Trematobolus*, n. g. for *T. insignis*, St. John Group of St. Martina, New Brunswick ; MATTHEW, Can. Rec. v, p. 276, fig. This genus is connected with the *Obolidae*, but differs in having articulate valves. It may be looked on as combining the features of *Siphonotreta*, *Schizambon*, and *Obolus* in its ventral valve, with those of *Obolus*, *Obolella*, and *Orthis* in its dorsal valve.

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## ARTICULATA.

## PRODUCTIDÆ.

- †*Chonetes pratti*, Davida, from Carboniferous of W. Australia ; NEWTON, Geol. Mag. 1892, pp. 468, 469, & 542-544, fig.  
 †*C. douvillei*, Devonian of Boulogne, BIGAUX, Mém. Soc. Acad. Boulogne, xiv, p. 104, fig. ; †*C. arcei*, p. 77, *ruecki*, p. 79, *stuebeli*, p. 80, Devonian of Bolivia, ULRICH, (28) figg. : n. spp.  
 †*Chonopertus*, n. g., type *Chonetes fischeri*, Norw. ; HALL & CLARKE, (17) p. 312, fig.  
 †*Chonostrophia*, n. g., type *Chonetes reversa*, Whitf. ; HALL & CLARKE, (17) p. 310, fig.

## STROPHOMENIDÆ.

- †*Billingsella*, n. g., type *Orthis pepina*, Hall ; HALL & CLARKE, (17) p. 230, figg.  
 †*Christiania*, n. g., type *Leptæna subquadrata*, Hall ; HALL & CLARKE, (17) p. 298, fig.  
 †*Dalmanella*, n. sect. of *Orthis*, group of *O. testudinaria*, Dalm. ; HALL & CLARKE, (17) p. 205, fig.  
 †*Dinorthis*, n. sect. of *Orthis*, group *O. pectinella*, Emm. ; HALL & CLARKE, (17) p. 195, fig.  
 †*Herbertella*, n. sect. of *Orthis*, group *O. sinuata*, Hall ; HALL & CLARKE, (17) p. 198, fig.  
 †*Heterorthis*, n. sect. of *Orthis*, group *O. clytie*, Hall ; HALL & CLARKE, (17) p. 202, figg.  
 †*Kayserella*, n. g., type *Orthis lepida*, Schnur. ; HALL & CLARKE, (17) p. 259, fig.  
 †*Leptella*, n. g., type *Leptæna sordida*, Billings ; HALL & CLARKE, (17) p. 293, fig.

- † *Orthidium*, n. g., type *Orthis gemmicula*, Billings ; HALL & CLARKE, (17) p. 244, fig.
- † *Orthis leviensis*, n. sp., from the Lower Silurian of Central Australia ; ETHERIDGE, (12) p. 24, figg.
- † *Orthotichia*, n. sect. of *Orthis*, group *O. ? morganiana*, Derby ; HALL & CLARKE, (17) p. 213, figg.
- † *Plesiomys*, n. sect. of *Orthis*, group *O. subquadrata*, Hall ; HALL & CLARKE, (17) p. 196, fig.
- † *Plectorthis*, n. sect. of *Orthis*, group of *O. plicatella*, Hall ; HALL & CLARKE, (17) p. 194, figg.
- † *Polytoechia*, n. subg. of *Clitambonites*, type *Hemipronites apicalis*, Whitf. ; HALL & CLARKE, (17) p. 239, fig.
- † *Protorthis*, n. g., type *Orthis billingsi*, Hartt. ; HALL & CLARKE, (17) p. 231, fig.
- † *Rafinesquina*, n. g., type *Leptæna alternata*, Conr. ; HALL & CLARKE, (17) p. 281, fig.

## SPIRIFERIDÆ.

- † *Athyris belencourti*, n. sp., Devonian, Boulogne ; RIGAUX, Mém. Soc. Acad. Boulogne, xiv, p. 103, fig.
- † *Cyrtina longuetii*, n. sp., Carboniferous of Boulogne ; RIGAUX, Mém. Soc. Acad. Boulogne, xiv, p. 105, fig.
- † *Meristella riskowskyi*, n. sp., Devonian of Bolivia ; ULRICH, (28) p. 64, figg.
- † *Spirifer urbana* and *macbridei*, Devonian, Iowa ; figured by CALVIN, Bull. Lab. Iowa, ii, pl. xii.
- † *S. barroisi*, Devonian, Boulogne, RIGAUX, Mém. Soc. Acad. Boulogne, xiv, p. 102, fig. ; † *S. chuquisaca*, Devonian of Bolivia, ULRICH, (28) p. 65, figg. : n. spp.
- † *Spiriferina moscai*, n. sp., Trias of Balia, Asia Minor ; BITTNER, JB. geol. Reichsanst., xlii, p. 80, fig.
- † *Spirigera tricupii*, n. sp., Trias of Balia, Asia Minor ; BITTNER, JB. geol. Reichsanst. xlii, p. 82, fig.
- † *Thecocyrtella* n. n. for *Cyrtotheca*, Bittner non Salter ; BITTNER, Abh. geol. Reichsanst. xvii, No. 2, p. 15.

## RHYNCHONELLIDÆ.

- † *Pentameridæ* of New South Wales ; ETHERIDGE, Rec. Geol. Surv. N.S.W. iii, pp. 49-60, 2 pls.
- † *Rhynchonella symptychos*, Middle Jurassic of S. E. Tirol, BOESE & FINKELSTEIN, Z. geol. Ges. xlv, p. 300, fig. ; *R. lemeslii*, Devonian, p. 103, *pellati*, Oxfordian, p. 106, of Boulogne, RIGAUX, Mém. Soc. Acad. Boulogne, xiv, figg. : n. spp.

## TEREBRATULIDÆ.

- † *Centronella* (?) *margarida*, Devonian, Matto Grosso, DERBY, Arch. Mus. R. Jan. ix, p. 84; *C. silvetii*, p. 51, *arcei*, p. 53, Devonian of Bolivia, ULRICH, (28) figg. : n. spp.
- † *Dinarella*, n. g., with *D. haueri*, n. sp., Trias of the Alps, BITTNER, Abh. geol. Reichsanst. xvii, No. 2, p. 24, figg.
- Hallina*, n. g. for *H. saffordi*, and *nicolleti*, n. spp., Lower Silurian of Minnesota, WINCHELL & SCHUCHERT, Am. Geol. ix, pp. 291-293.
- † *Notothyris* (?) *smithii*, n. sp., Devonian of Matto Grosso, DERBY, Arch. Mus. R. Jan. ix, p. 81, fig.
- † *Terebratulu haasi*, p. 287, *vespertilio*, p. 290, Middle Jurassic of S. E. Tirol, n. spp., BOESE & FINKELSTEIN, Z. geol. Ges. xlv, figg.
- † *Terebratulina substriata*, Schloth., in Yorkshire; WALKER, Geol. Mag. 1892, p. 364.
- Waldheimia venosa*, Soland., anatomy with figg.; JOUBIN, Mém. Soc. Zool. v, pp. 554-583.
- † *W. bukowski*, Trias of Balia, Asia Minor, BITTNER, JB. geol. Reichsanst. xlii, p. 79, fig.; † *W. tesinensis*, Middle Jurassic of S. E. Tirol, BOESE & FINKELSTEIN, Z. geol. Ges. xlv, p. 285, fig. : n. spp.

## THECIDEIDÆ.

- † *Thecidea*: on Yorkshire species; WALKER, Geol. Mag. 1892, p. 548.

## IX. BRYOZOA (POLYZOA).

BY

B. B. WOODWARD, F.G.S., F.R.M.S., &c.

(With kind assistance from B. KIRKPATRICK, Esq., F.Z.S., &c.)

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### I.—TITLES.

1. AMI, H. M. Notes and descriptions of some new or hitherto unrecorded species of Fossils from the . . . Ordovician rocks of the Province of Quebec . . . *Bryozoa*. Can. Rec. v, pp. 96–103.
2. BIERBAUER, B. A Check-list of the Palæozoic Fossils of Wisconsin, Minnesota, Iowa, Dakota, and Nebraska. Bull. Minnesota Acad. iii. *Polysoa*, pp. 222–226.
3. BIZET, E. Catalogue des Mollusques observés à l'état vivant dans le Département de la Somme. Mém. Soc. L. N. Fr. viii. *Bryozoa*, pp. 393–402.
4. BRAEM, F. Die keimblätter der Bryozoen-Knospe. Zool. Anz. xv, pp. 113–115.  
For reply see DAVENPORT (5).
5. DAVENPORT, C. B. The germ-layers in Bryozoan buds. Zool. Anz. xv, pp. 261–263.  
A reply to BRAEM (4).
6. DEMADE, P. Le Statoblaste des Phylactolémates (Bryozoaires d'eau douce) étudié chez l'*Alcyonella fungosa* et la *Cristatella mucida*. La Cellule, viii, pp. 333–378, 2 pls.
7. HALLEZ, P. Dragages effectués dans le Pas-de-Calais . . . 1888 et 1889. Rev. Biol. ii (1889) [*Bryozoa*], pp. 37 & 38.
8. —. Addition à la liste des Bryozoaires du Boulonnais *Op. cit.* iv (1891), pp. 119 & 120.
9. —. Deuxième supplément à la liste des Bryozoaires du Boulonnais. *Op. cit.* v (1892), pp. 123 & 124.

10. HARMER, S. F. On the nature of the Excretory Processes in Marine *Polyzoa*. Q. J. Micr. Sci. xxxiii, pp. 123-167, 2 pls.
11. HELM, S. *Cordylophora lacustris* and five forms of Animal Life. J. N. Y. Micr. Soc. viii, pp. 43-50, figg.
12. HENNIG, A. H. Studier öfver Bryozoerna i Sveriges Kritisystem. 1. *Cheilostomata*. Act. Lund. xxviii, No. 11, 51 pp., 2 pls.
13. HINCKES, T. Contributions towards a general history of the Marine *Polyzoa*, 1890-91. Appendix [contd.]. Ann. N. H. ix, pp. 327-334.  
Species described in the main work are still misquoted as "n. sp."
14. —. The *Polyzoa* of the St. Lawrence: a study of Arctic forms. T. a. pp. 149-157, 1 pl.
15. KOROTNEV, A. Po voprosu razvitiya pryesnovodnuikh mshanok.— Sur la question du développement des Bryozoaires d'eau douce. Zapiski Kiev. x, pp. 393-410, 2 pls.
16. KRAEPELIN, K. Die Deutschen Süßwasser-Bryozoen. II. Entwicklungsgeschichtlicher Theil. Abh. Geb. Hamb. xii, No. 2, 67 pp., 5 pls.
17. NAMIAS, I. Su alcune forme Briozoarie del Mar Rosso. Atti Soc. Mod. xi, pp. 74-77.
18. NEVIANI, A. Contribuzione alla conoscenza dei Briozoi fossili Italiani—Briozoi post-pliocenici del sottosuolo di Livorno. Boll. Soc. geol. Ital. x, pp. 99-148, 1 pl.
19. VINE, G. R. Notes on *Polyzoa* found at Cleethorpes in 1875, 1879, and 1882. Naturalist, 1892, pp. 5-11.
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21. WATERS, W. North Italian [fossil] *Bryozoa*. Pt. II. *Cyclostomata*. Q. J. Geol. Soc. xlviii, pp. 153-162, 1 pl.
22. —. Observations on the Gland-like Bodies in the *Bryozoa*. J. L. S. xxiv, pp. 272-278, 1 pl. Abstr. in J. R. Micr. Soc. 1892, p. 777.

## II.—ANATOMY, &c.

Observations on the gland-like bodies in the *Bryozoa*; WATERS (22).—Nature of the excretory processes in Marine *Bryozoa*; HARMER (10).

Development of freshwater *Bryozoa*; KOROTNEV (15).—Development of German freshwater *Bryozoa*; KRAEPELIN (16).—DEMADE (6) concludes that the membrane of the statoblast in *Alcyonella fungosa* and

*Cristatella mucedo* is composed of cells which undergo cellular differentiation, whilst the central mass is a tissue during all the periods of its development.

On the germ-layers in Bryozoan buds; BRAEM (4), DAVENPORT (5).

### III.—DISTRIBUTION.

#### A.—GEOGRAPHICAL.

Lincolnshire: *Bryozoa* found at Cleethorpes; VINE (19).

Norway: list of *Bryozoa* dredged on the coast; HERDMANN, P. Liverpool. Biol. Soc. vi, pp. 90 & 91.

Boulonnais: list of species; HALLEZ (7-9).

Somme: *Bryozoa* of the Department of; BIZET (3).

Red Sea: some species from; NAMIAS (17).

New Jersey: *Urnatella walkerii*, n. sp. [?], and *Octocella libertus*, n. g. [?], n. sp. [?]; HELM (11).

List, with figg., of *Bryozoa* of the St. Lawrence; HINCKS (14).

#### B.—GEOLOGICAL.

Palaeontological summary for 1890: *Bryozoa*, by G. F. DOLLFUS, Ann. Géol. univ. Paris, 1890 (1892), pp. 1039-1049.

Post-pliocene forms from the neighbourhood of Livorno, with 4 new species; NEVIANI (18).

Tertiary *Cyclostomata* of N. Italy, 22 species, including *Diastopora brendolensis*, *Defrancia brendolensis*, and *Lichenopora* (?) *incrustans*, new; WATERS (21).

Cretaceous: *Bryozoa* from the Upper Chalk; VINE (20).—Cretaceous *Bryozoa* of Sweden, with 13 new species; HENNIG (12).—*Bryozoa* from the Upper Senonian of Irnich, Eifel; VOGEL, Verh. Ver. Rheinl. xlix, pp. 93-99, fig.—Upper Senonian *Bryozoa* of the Eifel; VOGEL, Verh. Ver. Rheinl. xlix, pp. 91-99.—*Bryozoa* from the Cretaceous of Schleswig-Holstein; STOLLY, MT. min. Inst. Kiel, i, pp. 244 & 245.—1 species from the Rolling Downs Beds of Queensland; JACK & ETHERIDGE, (ante, Moll. 193) pp. 441 & 442.

Jurassic species from Yorkshire (List); FOX-STRANGWAYS, Mem. Geol. Surv. U. K., Jurassic Rocks, ii, pp. 148 & 200.

Palaeozoic: Check-list of Palaeozoic *Bryozoa* from Wisconsin, Minnesota, Iowa, Dakota, and Nebraska; BIERBAUER (2).

Permian *Bryozoa* from the Duchy of Sachsen-Altenburg; GEINITZ, MT. Osterlande. v, p. 179.

Permo-Carboniferous species, *Polypora*? *smithii*, n. sp., from Queensland; JACK & ETHERIDGE, (ante, Moll., 193) pp. 216-225.

Devonian species from Manitoba, with *Pinucotrypa marginata*, n. sp.; WHITEAVES, Contr. Can. Pal. i, pp. 277-281, figg.

Ordovician species from the province of Quebec, with *Dicranopora parva*, *Diplotrypa quebecensis*, and *Monotrypa incerta*, n. spp.; AMI (1).



## IV.—SYSTEMATIC.

(†) is prefixed to fossil forms.

## ENTOPROCTA.

*Urnatella walkerii*, New Jersey; HELM, J. N. Y. Micr. Soc. viii, p. 47, fig., alleged new species; it appears to be a *Pedicellina*, but it is not stated whether it is furnished with a stolon or not.

*Rhabdopleura*: cf. VERMES, sub *HEMICHORDATA*, where this and *Cephalodiscus* will in future be included with *Balanoglossus*.

## ECTOPROCTA.

## CYCLOSTOMATA.

† *Crisia destefanii*, n. sp., Post-pliocene of Livorno; NEVIANI, Boll. Soc. geol. Ital. x, p. 135, fig.

† *Defrancea brendolensis*, n. sp., Tertiary of N. Italy, WATERS, Q. J. Geol. Soc. xlviii, p. 161, fig.

† *Diastopora brendolensis*, n. sp., Tertiary of N. Italy, WATERS, Q. J. Geol. Soc. xlviii, p. 155, fig.

† *Dicranopora parva*, n. sp., Ordovician of Quebec, AMI, Can. Rec. v, p. 99.

† *Liplotrypa quebecensis*, n. sp., Ordovician of Quebec; AMI, Can. Rec. v, p. 100.

† *Entalophora d'anconæ*, n. sp., Post-pliocene of Livorno, NEVIANI, Boll. Soc. geol. Ital. x, p. 143, fig.

† *Idmonea targionii*, n. sp., Post-pliocene of Livorno, NEVIANI, Boll. Soc. geol. Ital. x, p. 139, fig.

† *Lichenopora* (?) *incrustans*, n. sp., Tertiary of N. Italy, WATERS, Q. J. Geol. Soc. xlviii, p. 161, fig.

† *Monotrypa incerta*, n. sp., Ordovician of Quebec, AMI, Can. Rec. v, p. 101.

## CTENOSTOMATA.

*Octocella*, n. g. [?] for *O. libertas*, n. sp. [?], New Jersey; HELM, J. N. Y. Micr. Soc. viii, p. 48, fig. [May be one out of several genera of *Ctenostomata*, e.g., *Cylindroecium*?, *Bowerbankia*?—not properly defined.]

## CHILOSTOMATA.

† *Cribrilina laevis, quadrisulcata*, n. spp., Cretaceous of Sweden, HENNIG, Act. Lund. xxviii, No. 11, pp. 37 & 38, figg.

*Heteroecium*, n. g. for *Membranipora amplexans*, Hincks; HINCKS, Ann. N. H. ix, p. 332.

- † *Lepralia impressipora*, n. sp., Cretaceous of Sweden, HENNIG, Act. Lund. xxviii, No. 11, p. 43, fig.
- † *Membranipora excavata*, n. sp., Cretaceous of Sweden, HENNIG, Act. Lund. xxviii, No. 11, p. 18, fig.
- † *Membraniporella aurita, juvenis*, n. spp., Cretaceous of Sweden, HENNIG, Act. Lund. xxviii, No. 11, pp. 38 & 39, figg.
- † *Monoporella inflata*, n. sp., Cretaceous of Sweden, HENNIG, Act. Lund. xxviii, No. 11, p. 40, fig.
- † *Macronella hians, vesperugo*, n. spp., Cretaceous of Sweden, HENNIG, Act. Lund. xxviii, No. 11, pp. 44 & 45, figg.
- † *Schizoporella carinata*, n. sp., Cretaceous of Sweden, HENNIG, Act. Lund. xxviii, No. 11, p. 42, fig.
- † *Smittia adae*, n. sp., Post-pliocene of Livorno, NEVIANI, Boll. Soc. geol. Ital. x, p. 127, fig.
- † *Steganoporella rhomboidalis*, n. sp., Cretaceous of Sweden, HENNIG, Act. Lund. xxviii, No. 11, p. 36, fig.
- † *Periteichisma smitti*, p. 25, *ignabergense*, p. 28, n. spp., Cretaceous of Sweden, HENNIG, Act. Lund. xxviii, No. 11, figg.

#### PHYLACTOLÆMATA.

The statoblast has been studied in *Alcyonella fungosa* and *Cristatella mucedo* by DEMANÉ, La Cellule, viii, pp. 333-378, 2 pls. [For conclusions, see *ante*, Anatomy, &c.]

#### [VERMIFORMIA.]

[Forms sometimes grouped under this heading will for the future be classed with VERMES (*q.v.*).]

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## X. CRUSTACEA.

(Including GIGANTOSTRACA AND PANTOPODA.\*)

By R. I. Pocock.

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### ARRANGEMENT OF RECORD :

CRUSTACEA, s. s.  
Titles of Papers, p. 1.  
Subject-Index, p. 13.  
Systematic, p. 16.  
PANTOPODA, p. 32.  
GIGANTOSTRACA, p. 33.

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### I.—TITLES OF PAPERS.

ALCOCK, A. (1) On the Stridulating Apparatus of the Red Ocypode Crab. Ann. N. H. (6) x, p. 336.

——. (2) On the Habits of *Gelasimus annulipes*. T. c. p. 415.

These two papers are reprinted from the Administration Report of the Marine Survey of India for 1891-92.

ALLEN, E. J. (1) Preliminary account of the Nephridia and Body-cavity of the Larva of *Palaemonetes varians*. P. R. Soc. lii, pp. 338-342.

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AMI, H. M. Additional Notes on the Geology and Palæontology of Ottawa and its Environs. Tr. Ottawa Nat. Club, vi, No. 5, p. 77.

*Ostracoda.*

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\* Since the GIGANTOSTRACA and PANTOPODA form part of the Marine fauna, and are largely, for this reason, studied systematically by students of Carcinology rather than of Arachnology, it has been considered advisable, on grounds of expediency, to transfer them to that section of the Zool. Rec. which deals with Crustacea.

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*Crustacea*, p. 75.

AURIVILLIUS, C. W. S. (1) Analyse d'un mémoire intitulé du déguisement des Décapodes Oxyrhynques à l'aide d'adaptations singulières du corps. Ann. Sci. Nat. xiii, pp. 341-348.

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BENEDEN, P. J. VAN. (1) Le mâle de certains Caligidés et un nouveau genre de cette famille. Bull. Ac. Belg. xxiii, p. 220, &c.

— (2) Quelques nouveaux Caligidés de la côte d'Afrique et de l'Archipel des Açores. *Op. cit.* xxiv, p. 241, &c.

— (3) Une nouvelle famille dans la tribu des Schizopodes. Bull. Ac. Belg. (3) xxii, pp. 444-459.

BENEDICT, J. E. Decapod *Crustacea* of Kingston Harbour. Johns Hopk. Univ. Circ. xi, p. 77.

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— (3) Preliminary descriptions of Thirty-seven New Species of Hermit Crabs, of the genus *Eupagurus*. *Op. cit.* No. 887, pp. 1-26.

BERGH, R. S. (1) Die Drehung des Keimstreifens und die Anlage des Dorsalorgans bei *Gammarus pulex*. Zool. Anz. xv, p. 268.

— (2) Zur Entwicklung des Keimstreifens von *Mysis*. T. c. p. 436.

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— (2) Sur la graisse du foie des Crustacés Décapodes. Bull. Soc. Philom. (8) iii, pp. 170-174.

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## II.—SUBJECT INDEX TO PAPERS ON ANATOMY, PHYSIOLOGY, EMBRYOLOGY, DISTRIBUTION, &c.

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 BRADY : *Cladocera* ; SCOURFIELD.—Edinburgh and the Firth of Forth :  
 SCOTT (1, 3, 5–8).—Granton : *Ostracoda* ; ROBERTSON (2).—Firth of Clyde :  
*Amphipoda* and *Isopoda* ; ROBERTSON (1).—Orkney : *Entomostraca* ;  
 SCOTT (9).—Yorkshire : rare *Crustacea* ; NORMAN (3).—Liverpool Bay :  
*Podophthalmata* and *Cumacea* ; WALKER (2, 3).—Plymouth and Coast  
 of Devonshire : *Crustacea* ; GARSTANG (1 & 2).

Iceland : *Isopoda* ; DOLLFUS (5): freshwater forms ; GUERNE &  
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Eastern Baltic : KOJEVNIKOV.

Germany : free-living, freshwater *Copepoda* ; SCHMEIL.

France : freshwater *Copepoda* ; RICHARD (7): *Ostracoda* ; GUERNE  
 (3) : *Isopoda* ; DOLLFUS (4) : *Amphipoda* ; CHEVREUX & BOUVIER  
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Hungary : *Ostracoda* ; CHYZER.—Bohemia : pond-life ; KAFKA.

Poland : NUSBAUM.

Russia : *Ostracoda* ; NATHORST.—S. W. of Russia : freshwater *Crus-*  
*tacea* ; SOWINSKY.—Black Sea ; OSTROUMOFF.

Mediterranean, &c. : *Pagurida* ; EDWARDS & BOUVIER.—Island of Elba  
 and Monte Christo : *Entomostraca* ; RICHARD (4).—Triest : *Copepoda* ;  
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 BOLIVAR.

Algeria : *Ostracoda* ; MONIEZ : *Cladocera* and *Copepoda* ; BLANCHARD  
 & RICHARD.

Syria : *Phyllopora* ; BARROIS : *Isopoda* ; DOLLFUS (3).

Azores : *Cryptopus* recorded ; GUERNE (2).

Canary Islands : KÆLBEL.

Senegal : *Entomostraca* ; GUERNE & RICHARD (2).

Japan : ORTMANN (1-3).

West Greenland : IVES.

Wisconsin : *Cladocera* ; BIRGE : Deep-water *Crustacea* of Green Lake ; MARSH.

#### b. *Ethiopian Region.*

African Lakes ; STUHLMANN.

St. Thomas (Gulf of Guinea) and Angola : OSORIO.—Assinie (W. Africa) : *Isopoda* ; DOLLFUS (1).

Red Sea : *Paguridæ* ; BOUVIER (5).

Madagascar : *Phyllopoda* ; GUERNE (1).

#### c. *Indo-Pacific Region.*

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Chili : freshwater *Entomostraca* ; RICHARD (8).

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### PODOPHTHALMA.

#### DECAPODA.

#### BRACHYURA.

#### INACHIDÆ.

*Simocarcinus pusillus*, Asaba, pp. 55 & 174, figg. 3 & 4, GAVINO, Bull. Soc. Nat. Napoli. (1) iii, n. sp.

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- L. macdonaldi*, Gulf of California, p. 238, pl. xxix, *spiniimana*, Carolina, &c., p. 240, pl. xxx, *mexicana*, Gulf of California, p. 242, pl. xxxi, fig. 3, RATHBUN, P. U. S. Nat. Mus. xv, n. spp.
- Pericera cornuta*, var. *celata*, M.-Edw., Florida, &c., p. 244; RATHBUN, P. U. S. Nat. Mus. xv.
- P. triangulata*, Gulf of California, p. 246, pl. xxxii, fig. 1, *atlantica*, Gulf of Mexico, p. 247, *contigua*, Gulf of California, p. 247, pl. xxxii, fig. 2, RATHBUN, P. U. S. Nat. Mus. xv, n. spp.
- Macrocaloma camptocera*, Stmp., Florida, p. 249, pl. xxxiii, fig. 2, *eutheca*, Stmp., Florida, p. 251; RATHBUN, P. U. S. Nat. Mus. xv.
- M. tenuirostris*, Jamaica, p. 252, pl. xxxiii, fig. 1, RATHBUN, P. U. S. Nat. Mus. xv, n. sp.
- Podohuenia*, n. g. for *P. erythraea*, n. sp., Massaua; GAVINO, Boll. Soc. Nat. Napoli (1) iii, p. 180, fig. 5.
- Tiarinia depressa*, Stmp., Ousima, p. 276, pl. xl, fig. 1, *spinigera*, Stmp., Ousima, p. 277, pl. xl, fig. 2; RATHBUN, P. U. S. Nat. Mus. xv.
- Othonia aculeata*, Gibbes, Florida, p. 255, pl. xxxiv, figg. 1 & 2, *chermi-nieri*, Schr., W. Indies, &c., p. 255, pl. xxxiv, figg. 3 & 4; RATHBUN, P. U. S. Nat. Mus. xv.
- O. carolinensis*, Charleston, p. 256, pl. xxxv, figg. 1 & 2, *nicholsi*, California, p. 257, pl. xxxv, fig. 3, *rotunda*, Florida, p. 258, pl. xxxvi, fig. 1, RATHBUN, P. U. S. Nat. Mus. xv, n. spp.
- Mithrax spinipes*, Bell, p. 259, *acuticornis*, Stmp., Gulf of Mexico, p. 260, pl. xxxvii, fig. 1, *forceps*, M.-Edw., N. America, Brazil, &c., p. 269; RATHBUN, P. U. S. Nat. Mus. xv.
- M. pilosus*, Bahamas, p. 262, pl. xxxix, *hemphilli*, Florida, p. 263, pl. xxxvii, fig. 2, *sinensis*, California, p. 266, pl. xxxviii, fig. 2, *bahamensis*, p. 267, pl. xxxviii, fig. 1, *braziliensis*, Brazil, p. 268, pl. xxxvi, fig. 2, RATHBUN, P. U. S. Nat. Mus. xv; *M. trigonopus*, Panama, p. 183, GAVINO, Boll. Soc. Nat. Napoli (1) iii : n. spp.
- Mithraculus tumidus*, Payta, p. 186, GAVINO, Boll. Soc. Nat. Napoli (1) iii, n. sp.

## COBYSTIDÆ.

- Telmessus cheiragonus*, Til., syn. *serratus*, White, &c., Oregon, &c., p. 224, pls. xxv & xxvi, figg. 2-4, *acutidens*, Stmp., Japan, p. 228, pl. xxvi, fig. 1; BENEDICT, P. U. S. Nat. Mus. xv.
- Erimacrus*, n. g., p. 229, for *Platycorystes isenbeckii*, Brandt, Unalaska, &c., p. 229, pl. xxvi, figg. 5-7, & pl. xxvii; BENEDICT, P. U. S. Nat. Mus. xv.

## CANCRIDÆ and TELPHUSIDÆ.

- Euryetisus*, n. g., p. 88, for *E. deplanatus*, n. sp., Singapore, pp. 81 & 200; GAVINO, Boll. Soc. Nat. Napoli (1) iii.
- Actumnus targionii*, Pernambuco, pp. 89 & 209, fig. 13; GAVINO, Boll. Soc. Nat. Napoli (1) iii, n. sp.

- Eucratoplax spinidentata*, Jamaica, BENEDICT, Johns Hopk. Univ. Circ. xi, p. 77, n. sp.
- Pilumnus tridentatus*, Maitl., is referable to the genus *Heteropanope*, the species figured and described, p. 228, pl. vii, fig. 1; DE MAN, Notes Leyd. Mus. xiv.
- Pilumnus sluiteri*, Batavia, p. 283, pl. 1, fig. 2, DE MAN, in Max Weber's Zool. Ergeb. ii, n. sp.
- Telphusa eminii*, n. sp., E. Africa, pp. 11-13, HILGENDORF (1). *T. granulata*, n. sp., Tjibodas, p. 290, pl. ii, fig. 5; *larnaudi*, n. var. *brevimarginata*, Sumatra and Java, p. 294, pl. iv, fig. 6; *celebensis*, n. sp., with 2 new vars., *lokaensis* and *pareparensis*, Celebes, p. 297, pls. xvii & xviii, fig. 17; DE MAN, in Max Weber's Zool. Ergeb. ii.
- Geotelphusa picta*, von Martens, Java, p. 234, pl. viii, fig. 2; *transversa*, von Mart., syn. *crassa*, M.-Edw., Fiji I., p. 241; DE MAN, Notes Leyd. Mus. xiv.
- G. loxophthalma*, Borneo, p. 245, pl. vii, fig. 3, DE MAN, Notes Leyd. Mus. xiv, n. sp.

## GRAPSIDÆ.

- Brachynotus harpax*, Aden, HILGENDORF, pp. 37-40, SB. nat. Fr. 1892, n. sp.
- Areograpsus jamaicensis*, Jamaica, BENEDICT, Johns Hopk. Univ. Circ. xi, p. 77, n. sp.
- Glyptograpsus spinipes*, Isola delle Perli, GAVINO, pp. 92 & 241, fig. 15, Boll. Soc. Nat. Napoli (1) iii, n. sp.
- Dotilla wickmanni*, Celebes, p. 308, pl. xviii, fig. 8, DE MAN, in Max Weber's Zool. Ergeb. ii, n. sp.
- Metaplax crassipes*, n. sp., Makassar, p. 325, pl. xix, fig. 12, DE MAN, in Max Weber's Zool. Ergeb. ii.
- Ptychognathus dentatus*, n. sp., Celebes, p. 318, pl. xviii, fig. 9; *riedelii*, n. var. *pilosa*, Flores, p. 323; DE MAN, in Max Weber's Zool. Ergeb. ii.
- Sesarma eydouxii*, M.-Edw., p. 248, *recta*, Rand., Surinam, p. 249, pl. x, fig. 4; *angusticeps*, Dana, syn. *ricordi*, M.-Edw., p. 253, fig. 5; *elongata*, A. M.-Edw., p. 256; DE MAN, Notes Leyd. Mus. xiv.
- S. curacaoensis*, n. sp., Curaçao, p. 257, fig. 6; DE MAN, Notes Leyd. Mus. xiv. *S. bidentata*, n. sp., Jamaica, p. 77; BENEDICT, Johns Hopk. Univ. Circ. xi. *S. melissa*, de Man, var. *moluccensis*, Flores, p. 328; *mœschii*, n. sp., Sumatra, p. 331, pl. xx, fig. 14; *frontalis*, A. M.-Edw., Flores, p. 334, pl. xx, fig. 13; *weberi*, n. sp., Flores, p. 338, fig. 15; DE MAN, in Max Weber's Zool. Ergeb. ii. *S. crassipes*, n. sp., Pernambuco, *barbinana*, n. sp., Payta, pp. 93, 244 & 245; GAVINO, Boll. Soc. Nat. Napoli (1) iii.
- Gossesarma*, n. subg. of *Sesarma*, p. 341, *nodulifera*, n. sp., Java, p. 342, pl. xx, fig. 16; *sylvicola*, n. sp., Sumatra, p. 345, pl. xx, fig. 18; *maculata*, n. sp., Flores, p. 347, pl. xxi, fig. 19; DE MAN, in Max Weber's Zool. Ergeb. ii.

## OXYSTOMATA.

This group with its three sections, the *Dorippinea*, *Calappinea*, and the *Leucosiinea*, pp. 550, &c. ; ORTMANN, Zool. Jahrb. vi.

## CYCLODORIPPIDÆ.

[New family, p. 582, ORTMANN, Zool. Jahrb. vi.]

*Cyclodorippe dromioides*, Japan, pp. 559, pl. xxvi, fig. 5, *uncifera*, Japan, p. 560, fig. 6, ORTMANN, Zool. Jahrb. vi, n. spp.

## HIPPIDÆ.

The group, with its two families, *Hippidæ* and *Albuniidæ*, characterized, p. 531-538 ; ORTMANN, *t. c.*

## DROMIIDÆ.

The group, with three families, *Homolidæ*, *Dynomenidæ*, n. fam., and *Dromiidæ*, characterized, pp. 538-542 ; ORTMANN, Zool. Jahrb. vi.

*Cryptodromia canaliculata*, n. var. *ophryoessa*, Japan, pp. 545 & 546 ; ORTMANN, Zool. Jahrb. vi.

*Dicranodromia döderleini*, n. sp., Japan, p. 549, pl. xxvi, fig. 4, ORTMANN, Zool. Jahrb. vi.

## CALAPPIDÆ.

*Calappa japonica*, n. sp., Japan, p. 566, pl. xxvi, fig. 8, ORTMANN, Zool. Jahrb. vi.

## MATUTIDÆ.

*Notopus novemdentatus*, n. sp., New Caledonia, p. 574, pl. xxvi, fig. 11, ORTMANN, Zool. Jahrb. vi.

## LEUCOSIIDÆ.

*Cryptocnemus obolus*, n. sp., Japan, p. 576, pl. xxvi, fig. 12, ORTMANN, Zool. Jahrb. vi.

*Ebalia longimanus*, Japan, p. 579, pl. xxvi, fig. 13, *scabriuscula*, Japan, p. 580, fig. 14, *conifera*, Japan, p. 580, fig. 15, ORTMANN, Zool. Jahrb. vi, n. spp.

*Philyra heterograna*, Japan, p. 582, pl. xxvi, fig. 17, *syndactyla*, Japan, p. 583, pl. xxvi, fig. 18, ORTMANN, Zool. Jahrb. vi, n. spp.

## ANOMUR.1.

## GALATHEIDEA.

This group characterized, with the families *Ægleidæ*, *Chirostylidæ*, n., *Galatheidæ*, and *Porcellanidæ*; ORTMANN, Zool. Jahrb. vi, pp. 241-326.

## PORCELLANIDÆ.

*Pachycheles levidactylus*, n. sp., Brazil, p. 26, pl. xii, fig. 1, ORTMANN, Zool. Jahrb. vi.

*Polyonyx carinatus*, Loo Choo, p. 268, pl. xii, fig. 2, ORTMANN, Zool. Jahrb. vi, n. sp.

*Porcellana pulchellula*, n. sp., St. Lorenzo, p. 260, GAVINO, Boll. Soc. Nat. Napoli (1) iii.

## CHIROSTYLIDÆ.

[New family, p. 244, ORTMANN, Zool. Jahrb. vi.]

*Chirostylus*, n. g., p. 246, for *C. dolichopus*, n. sp., Japan, p. 246, p. xi, fig. 2; ORTMANN, Zool. Jahrb. vi.

## GALATHEIDÆ.

*Uroptychus japonicus*, Japan, p. 248, pl. xi, fig. 3, ORTMANN, Zool. Jahrb. vi, n. sp.

*Galathea*: synopsis of the species, pp. 248 & 249; ORTMANN, Zool. Jahrb. vi.

*G. affinis*, n. sp., Fiji I., p. 252, pl. xi, fig. 9, ORTMANN, Zool. Jahrb. vi.

*Munida heteracantha*, Japan, p. 255, pl. xi, fig. 12, ORTMANN, Zool. Jahrb. vi, n. sp.

*Munidopsis taurulus*, Japan, p. 256, pl. xi, fig. 13, ORTMANN, Zool. Jahrb. vi; *M. polymorpha*, Canary Is., p. 109, pl. x, figg. 3-16, KÆLBEL, Ann. Hofmuseum Wien, vii : n. spp.

*Galucantha camelus*, Japan, p. 257, pl. xi, fig. 14; ORTMANN, Zool. Jahrb. vi, n. sp.

## PORCELLANIDÆ.

*Petrolisthes reissii*, Ecuador, p. 260, pl. xi, fig. 15, *leporinoides*, S. Sea, p. 263, ORTMANN, Zool. Jahrb. vi, n. spp.

## PAGURIDEA.

This tribe contains the families *Parapaguridæ*, *Paguridæ* (with subfams. *Pagurinae*, *Diogeninae*, *Eupagurinae*), *Cænobitidæ*, and *Lithodidæ*, pp. 269-273; ORTMANN, Zool. Jahrb. vi.

## PARAPAGURIDÆ.

- Parapagurus abyssorum*, Hend., is synonymous with *P. pilosimanus*, Smith, p. 204; EDWARDS & BOUVIER, Ann. Sci. Nat. xiii.  
*Chiroplatea scalata*, Gulf of Mexico, p. 275, pl. xii, fig. 4; ORTMANN, Zool. Jahrb. vi, n. sp.

## PAGURIDÆ.

- Anapagurus pusillus*, Hend., n. var. *japonicus*, Japan, p. 296, pl. xii, fig. 11; ORTMANN, Zool. Jahrb. vi.  
*A. brevicarpus*, Spain, p. 215, *bicorniger*, Cadiz, p. 215, EDWARDS & BOUVIER, Ann. Sci. Nat. xiii; *A. curridactylus*, Dakar, p. 253, CHEVREUX & BOUVIER, Bull. Soc. Z. Fr. xv, and Mém. Soc. Zool. v, p. 91, pl. ii, figg. 2-8: n. spp.  
*Calcinus talismani*, Cape Verde, p. 225, EDWARDS & BOUVIER, Ann. Sci. Nat. xiii, n. sp.  
*Catapaguroides*, n. g. for *C. microps*, Spain, p. 211, *megalops*, Marocco, p. 213, *acutifrons*, Canaries, p. 213, n. spp., EDWARDS & BOUVIER, Ann. Sci. Nat. xiii.  
*Clibanarius melitai*, Dakar, p. 255, Bull. Soc. Z. Fr. xvi, and p. 135, pl. iv, figg. 3-6, Mém. Soc. Zool. v; *senegalensis*, Dakar, p. 256, *t. c.* and p. 131, pl. iv, figg. 7-11, *t. c.*, CHEVREUX & BOUVIER: n. spp.  
*Diogenes denticulatus*, n. sp., Rufisque, CHEVREUX & BOUVIER, p. 254, Bull. Soc. Z. Fr. xvi, and p. 122, pl. iii, figg. 16-20, Mém. Soc. Zool. v.  
*Eupagurus lævimanus*, Tahiti, p. 302, pl. xii, fig. 13; *dubius*, Japan, p. 307, pl. xii, fig. 14; *triserratus*, Japan, p. 308, pl. xii, fig. 15; *similis*, Japan, p. 310; *barbatus*, Japan, p. 311; *samoensis*, Samoa, p. 312, pl. xii, fig. 17; *obtusifrons*, Japan, p. 313, pl. xii, fig. 18; *ophthalmicus*, Japan, p. 314, pl. xii, fig. 19, ORTMANN, Zool. Jahrb. vi; *E. variabilis*, Gulf of Gascony, p. 217; *pubescentulus*, Marocco, p. 219; *irregularis*, Cape Blanco, p. 220; *pulchellus*, Cape Verde, p. 221; *ruber*, ? Gulf of Gascony, p. 222, EDWARDS & BOUVIER, Ann. Sci. Nat. xiii; *triangularis*, Dakar, p. 253, Bull. Soc. Z. Fr. xvi, and p. 93, pl. ii, figg. 9-15, Mém. Soc. Zool. v; *inermis*, Dakar, p. 254, *t. c.* and p. 109, pl. iii, *t. c.* figg. 1-5; *minimus*, Dakar, p. 106, pl. ii, figg. 21-26, CHEVREUX & BOUVIER; *E. alaskensis*, Alaska, p. 2, *aleuticus*, Aleutian Is., p. 3; *patagoniensis*, Patagonia, p. 4; *smithi*, Gulf of California, p. 4; *impressus*, Florida, p. 5; *floridanus*, Florida, p. 5; *exilis*, La Plata, p. 6; *albus*, California, p. 6; *gladius*, California, p. 7; *defensus*, Gulf of Mexico, p. 7; *capillatus*, Alaska, p. 8; *brandti*, *dalli*, Aleutian Is., p. 9; *tanneri*, p. 10; *confragosus*, p. 11; *cornutus*, p. 12; *townsendi*, p. 13; *rathbuni*, p. 14, Alaska; *minutus*, Gulf of California, p. 14; *purpuratus*, Galapagos I., p. 15; *hemphilli*, California, p. 16; *beringanus*, Aleutian Is., p. 17; *newcombei*, British Columbia, p. 17; *undosus*, Bering Sea, p. 18; *setosus*, *minutus*, p. 19; *gilli*, p. 20, Alaska, *curaçaoensis*, Curaçao, p. 21; *californiensis*, *mexicanus*, *roseus*,



California, p. 22; *corallinus*, Florida, p. 23; *coronatus*, California, p. 24; *varians*, Gulf of California, p. 24; *cervicornis*, p. 25; *parvus*, p. 26, California; *hispidus*, Cuba, p. 26, BENEDICT, P. U. S. Nat. Mus. xv : n. spp.

*Nematopagurus*, n. g., p. 209, for *N. longicornis*, n. sp., Mediterranean, &c.; EDWARDS & BOUVIER, p. 210, Ann. Sci. Nat. xiii.

*Paguristes polythophilus*, p. 277, pl. xii, fig. 5, *acanthomerus*, p. 279, pl. xii, fig. 6, *kagoshimensis*, p. 281, pl. xii, fig. 8, Japan, ORTMANN, Zool. Jahrb. vi; *P. hispidus*, Liberia, p. 208, EDWARDS & BOUVIER, Ann. Sci. Nat. xiii : n. spp.

## LITHODIDÆ.

*Lithodes turritus*, Japan, p. 320, pl. xii, fig. 26, ORTMANN, Zool. Jahrb. vi, n. sp.

*Hapalogaster grebnitzkii*, Behring Is., p. 335, fig. 3, *brandti*, Sitka, p. 336, fig. 1, SCHALFÉEF, Bull. Pétersb. xxxv, n. spp.

*Placetron*, n. g., p. 339, for *P. wosnessenskii*, n. sp., Kadjak, p. 339, fig. 6; SCHALFÉEF, Bull. Pétersb. xxxv.

## MACRURA.

The groups *Homaridea*, *Loricata*, and *Thalassinidea*, characterized. The *Homaridea*, containing the *Homaridæ* and *Astacidæ*; the *Loricata*, containing the *Palinuridæ* and *Scyllaridæ*; and the *Thalassinidea*, containing the *Aziidæ*, *Thalassinidæ*, *Calocaridæ* (n. fam.), and *Callianassidæ*; ORTMANN, Zool. Jahrb. vi.

## ASTACIDÆ.

*Astacus similis*, Corea; KÆLBEL, Anz. Ak. Wien, xviii, pp. 176 & 177, n. sp.

## PALINURIDÆ.

The known genera of the family characterized; ORTMANN, pp. 14 & 15, Zool. Jahrb. vi.

*Avus*, n. g., syn. *Linuparis*, Gray; ORTMANN, p. 21, Zool. Jahrb. vi.

*Senex*, n. g., syn. *Panulirus*, Gray: synopsis of the species; ORTMANN, pp. 22 & 23, Zool. Jahrb. vi.

*Puer*, n. g., syn. *Panulirus*, Bate in part, for *angulatus*, Bate, and *pellucidus*, n. sp., Japan, p. 37, pl. i, fig. 3; ORTMANN, Zool. Jahrb. vi.

## AZIIDÆ.

*Eiconaxius farrea*, Japan, pp. 49 & 50, pl. i, fig. 4, ORTMANN, Zool. Jahrb. vi, n. sp.

## CALLIANASSIDÆ.

- Gebia littoralis*, Risso, Naples, &c., p. 53, pl. i, fig. 6, *major*, De Haan, Japan, p. 54, pl. i, fig. 7, *barbata*, Str., Samoa, p. 54, pl. i, fig. 8, *isodactyla*, n. sp., Red Sea, p. 55, pl. i, fig. 9; ORTMANN, Zool. Jahrb. vi.
- Callianassa subterranea*, Mont., Mediterranean Sea, p. 55, pl. i, fig. 10, n. var. *japonica*, Japan, fig. 10A, *diademata*, n. sp., Africa, p. 56, pl. i, fig. 11; ORTMANN, Zool. Jahrb. vi.

## ATYIDÆ.

- Atya moluccensis*, De Haan, Java, Sumatra, Celebes, &c., p. 357, pl. xxi, fig. 20, *brevirostris*, n. sp., Flores, p. 360, pl. xxi, fig. 21; DE MAN, in Max Weber's Zool. Ergeb. ii.
- Caridina typus*, M.-Edw., Flores, Celebes, p. 367, pl. xxi, fig. 22; *weberi*, n. sp., Flores, &c., p. 371, pl. xxii, fig. 23, var. *sumatrensis*, n. var., Sumatra, p. 375, pl. xxii, fig. 33G; *parvirostris*, n. sp., Flores, p. 375, pl. xxii, fig. 24; *levis*, Hell., Java, p. 376, pl. xxiii, fig. 27; *pareparensis*, n. sp., Celebes, p. 379, pl. xxii, fig. 25; *multidentata*, n. sp., Celebes, p. 380, pl. xxii, fig. 26; *serratirostris*, n. sp., Flores, p. 382, pl. xxiii, fig. 28, n. var. *celebensis*, Celebes, p. 385, pl. xxiii, fig. 28; *wyckii*, Hickson, Celebes, p. 386, pl. xxiv, fig. 29, n. var. *gracilipes*, Celebes, p. 393; *brevicarpalis*, Celebes, p. 397, pl. xxiv, fig. 30, n. var. *endeheensis*, p. 399, pl. xxiv, fig. 30E; *gracilirostris*, n. sp., Celebes, p. 399, pl. xxv, fig. 31; DE MAN, in Max Weber's Zool. Ergeb. ii; *japonica*, n. sp., Japan, p. 261, pl. ix, figg. 7 & 8; DE MAN, Notes Leyd. Mus. xiv.

## PALÆMONIDÆ.

- Alpheus gracilidigitus*, Miers, loc. ?, p. 406, pl. xxv, fig. 32; DE MAN, in Max Weber's Zool. Ergeb. ii.
- Hippolyte ponapensis*, Ortm., is a synonym of *Hetairocaris orientalis*, De Man; DE MAN, p. 263, Notes Leyd. Mus. xiv.
- Palæmon weberi*, n. sp., Celebes, p. 421, pl. xxv, fig. 33; *dispar*, v. Martens, Celebes, &c., p. 427, pl. xxvi, fig. 34; *sundaicus*, Heller, Flores, Celebes, p. 437, pl. xxvi, fig. 35; *elegans*, n. sp., Java, p. 440, pl. xxvi, fig. 36; *equidens*, Dana, Sumatra, p. 453, pl. xxvi, fig. 36; *javanicus*, Hell., Sumatra, p. 457, pl. xxvi, fig. 38; *horstii*, n. sp., Celebes, p. 460, pl. xxvii, fig. 39; *scabriculum*, Hell., Celebes, p. 462, pl. xxvii, fig. 41; *endeheensis*, n. sp., Flores, p. 465, pl. xxvii, fig. 42; *modestus*, n. sp., Flores, p. 469, pl. xxvii, fig. 43; *pilimanus*, De Man, Sumatra, p. 471, pls. xxvii & xxviii, fig. 44, n. var. *leptodactylus*, Java, p. 476, pl. xxviii, figg. 44 & k-i; *latimanus*, v. Mart., syn. *euryrhynchus*, Ortm., Flores, Timor, &c., p. 477, pl. xxviii, fig. 45; *placidus*, n. sp., Sumatra, p. 483, pl. xxviii, fig. 46; *placidulus*, n. sp., Flores, &c., p. 489, pl. xxviii, fig. 48; *lampropus*, n. sp., Celebes, p. 493, pl. xxix,

fig. 49; *bariensis*, n. sp., Flores, p. 490, pl. xxix, fig. 50; *lepidactyl-loides*, n. sp., Flores, p. 497, pl. xxix, fig. 51; *lepidactylus*, Thal., Celebes, p. 501, fig. 52; *latidactylus*, Thal., Flores, p. 504, pl. xxix, fig. 52; DE MAN, in Max Weber's Zool. Ergeb. ii.

## PENÆIDÆ.

*Penæus semisulcatus*, De Haan, Celebes, p. 510; *indicus*, M.-Edw., syn. *merguiensis*, De Man, Celebes, p. 511, pl. xxix, fig. 3; *monoceros*, Fabr., Celebes, p. 513, pl. xxix, fig. 54; DE MAN, in Max Weber's Zool. Ergeb. ii.

## PSALIDOPODIDÆ.

[N. fam., p. 265; WOOD-MASON & ALCOCK, Ann. N. H. (6) ix.]

*Psalidopus*, n. g., p. 266, for *P. huxleyi*, Andaman Sea, p. 273, pl. xiv, figg. 1, 2, 7, *spiniventris*, p. 274, pl. xiv, figg. 3-6, and pl. xv, figg. 1-10, n. spp., Andaman Sea; WOOD-MASON & ALCOCK, *t. c.*

## ACANTHEPHYRIDÆ.

*Acanthephyra sanguinea*, n. sp., p. 358, fig. 1; *armata*, M.-Edw., p. 359, fig. 2; *eximia*, Smith, p. 361, fig. 3; *brachytelsonis*, Bate, p. 363, fig. 4; *curtirostris*, W.-M., p. 364, fig. 5, Indian Ocean; WOOD-MASON & ALCOCK, Ann. N. H. (6) ix.

## SCHIZOPODA.

NORMAN, Ann. N. H. (6) ix, pp. 454-464, and x, pp. 143-166, 242-263, characterizes this group with the families, sub-families, genera and species that are known to occur in Britain.

## CRYPTOPODIDÆ.

[N. fam., p. 444, &c., BENEDEN, Bull. Ac. Belg. xxii.]

*Cryptopus*, syn. *Cerataspis*, referred to the *Penaidæ*, p. 1029; GIARD & BONNIER, C.R. cxiv.

## MYSIDÆ.

*Mysidopsis gibbosa*, Sars, p. 164, pl. x, fig. 8; *angusta*, Sars, p. 165, fig. 9, British Seas; *hibernica*, n. sp., Valentia, p. 165, pl. ix, figg. 1-5; NORMAN, Ann. N. H. (6) ix.

*Schistomysis*, n. g., p. 254, for *S. parkeri*, n. sp., Devon, p. 256, pl. x, figg. 1-7; NORMAN, Ann. N. H. (6) ix.

*Heteromysis formosa*, Smith, syn. *norvegica*, Sars, British Seas, p. 158, pl. ix, figg. 6-11; NORMAN, Ann. N. H. (6) ix.

*Erythropse elegans*, Sars, p. 161, pl. x, fig. 10; NORMAN, Ann. N. H. (6) ix.

## EDRIOPHTHALMA.

## CUMACEA.

- Cyclaspis levis*, Dunedin, p. 264, pls. xvi & xvii, figg. 1-26, THOMSON, J. L. S. xxiv, n. sp.  
*Diastylis neo-zelandica*, Dunedin, Otago Bay, p. 268, pl. xviii, figg. 1-11 ; THOMSON, J. L. S. xxiv, n. sp.

## AMPHIPODA.

## AMPHILOCHIDÆ.

- Astyra abyssi*, Boeck, Norway, p. 214, pl. lxxiii ; Sars, Amphipoda of Norway.  
*Amphilochoides*, n. g., p. 220, for *Amphilochus odontonyx*, Boeck, p. 221, pl. lxxv, fig. 2 ; and *A. pusillus*, n. sp., p. 222, pl. lxxvi, fig. 1, Norway ; Sars, Amphipoda of Norway.  
*Amphilochus manudens*, Sp. Bate, p. 217, pl. lxxiv ; *tenuimanus*, n. sp., p. 218, pl. lxxv, fig. 1, Norway ; Sars, Amphipoda of Norway.  
*Gitana sarsii*, Boeck, syn. *A. sabrinæ*, p. 228, pl. lxxviii, fig. 1 ; *abyssicola*, n. sp., p. 229, pl. lxxviii, fig. 2 ; *rostrata*, Boeck, p. 230, pl. lxxix, fig. 1, Norway ; Sars, Amphipoda of Norway.  
*Gitanopsis*, n. g., p. 223, for *G. bispinosa*, Boeck, p. 224, pl. lxxvi, fig. 2 ; *inermis*, Sars, p. 225, pl. lxxvii, fig. 1, and *G. arctica*, n. sp., p. 227, pl. lxxvii, fig. 2, Norway ; Sars, Amphipoda of Norway.  
*Stegoplax longirostris*, Sars, Norway, p. 232, pl. lxxix, fig. 2 ; Sars, Amphipoda of Norway.

## GAMMARIDÆ.

- Gammarus delebecquei*, from the Lake of Annecy, p. 1286, CHEVREUX & DE GUERNE, Bull. Soc. Z. Fr. xvii, & C.R. cxiv, n. sp.

## LEUCOTHOIDÆ.

- Leucothoe spinicarpa*, Abild., p. 283, pls. c & ci, fig. 1, *lilljeborgi*, Boeck, p. 284, pl. ci, fig. 2 ; Sars, Amphipoda of Norway. *L. incisa*, n. n. for *L. furina*, Chevreux, from Cumbræ, p. 217 ; ROBERTSON, P. N. H. Soc. Glasg. iii.

## LYSIANAXIDÆ.

- Synonymy of British *Lysianaxidæ* ; WALKER, Ann. N. H. (6) ix, pp. 134-138.  
*Pararistias*, n. g., p. 201, for *Lysianassa audouinianus*, Bate ; ROBERTSON, P. N. H. Soc. Glasg. iii.  
*Perrierella*, n. g. for *P. crassipes*, n. sp., France, p. 50 ; CHEVREUX & BOUVIER, Bull. Soc. Z. Fr. xvii.  
*Socarnes erythrophthalmus*, Cumbræ, p. 200, ROBERTSON, P. N. H. Soc. Glasg. iii, n. sp.

## CEDICERIDÆ.

- Aceros phyllonyx*, Sars, p. 338, pls. cxix & cxx, fig. 1, Norway; Sars, Amphipoda of Norway.
- Bathymedon*, n. g., p. 332, for *B. longimanus*, Boeck, p. 333, pl. cxvii; *saussurei*, Boeck, p. 335, pl. cxviii, fig. 1; *obtusifrons*, Hans., p. 336, pl. cxviii, fig. 2, Norway; Sars, Amphipoda of Norway.
- Halicreion longicaudatus*, Boeck, p. 322, pl. cxiii, fig. 2, Norway; Sars, Amphipoda of Norway.
- Halimedon mülleri*, Boeck, p. 327, pl. cxv; *acutifrons*, n. sp., p. 329, pl. cxvi; *megalops*, Sars, p. 330, pl. cxvi, fig. 2; *brevicalcar*, Goës, p. 331, pl. cxvi, fig. 3; Norway; Sars, Amphipoda of Norway.
- Monoculodes carinatus*, Sp. Bate, p. 295, pl. cv; *tessellatus*, Schn., p. 297, pl. cvi, fig. 1; *borealis*, Boeck, p. 298, pl. cvi, fig. 2; *pallidus*, n. sp., p. 299, pl. cvi, fig. 3; *norvegicus*, Boeck, p. 301, pl. cvii, fig. 1; *falcatus*, n. sp., p. 302, pl. cvii, fig. 2; *tuberculatus*, Boeck, p. 303, pl. cvii, fig. 3; *latimanus*, Goës, p. 304, pl. cviii, fig. 1; *kroyeri*, Boeck, p. 305, pl. cviii, fig. 3; *longirostris*, Goës, p. 306, pl. cviii, fig. 3; *packurdi*, Boeck, p. 307, pl. cix, fig. 1; *tenuirostratus*, Boeck, p. 309, pl. cix, fig. 2; Norway; Sars, Amphipoda of Norway.
- Monoculopsis*, n. g., p. 310, for *longicornis*, Boeck, p. 311, pl. cx, fig. 1, Norway; Sars, Amphipoda of Norway.
- Cediceropsis brevicornis*, Lillj., p. 325, pl. cxiv, Norway; Sars, Amphipoda of Norway.
- Cedicros saginatus*, Kröy., p. 288, pl. cii; *borealis*, Boeck, p. 290, pl. ciii, fig. 1, Norway; Sars, Amphipoda of Norway.
- Paradiceros*, n. g., p. 291, *lynceus*, Sars, p. 292, pl. ciii, fig. 2, & pl. civ, fig. 1; *propinquus*, Goës, p. 293, pl. civ, fig. 2, Norway; Sars, Amphipoda of Norway.
- Periculodes*, n. g., p. 312, for *P. longimanus*, Sp. Bate, p. 313, pl. cx, fig. 2, & pl. cxi, fig. 1, Norway; Sars, Amphipoda of Norway.
- Pontocrates norvegicus*, Boeck, p. 315, pl. cxi, fig. 2, Norway; Sars, Amphipoda of Norway.
- Synchelidium*, n. g., p. 317, for *brevicarpum*, Sp. Bate, p. 318, pl. cxii, fig. 1; *haplocheles*, Grube, p. 319, pl. cxii, fig. 2; *intermedium*, n. sp., p. 320, pl. cxiii, fig. 1, Norway; Sars, Amphipoda of Norway.

## ORCHESTIDÆ.

- Orchestia floresiana*, p. 562, *martensii*, p. 564, Flores, *parvispinosa*, Java, p. 566, *montana*, Celebes, p. 567, MAX WEBER, Zool. Ergeb. ii, n. spp.
- Hyale grimaldii*, p. 257, figg. 1-5, CHEVREUX, Bull. Soc. Z. Fr. xvi, n. sp.

## STENOTHOIDÆ.

- Cressa dubia*, Sp. Bate, p. 278, pl. xcviii, fig. 2, & pl. xcix, fig. 1; *minuta*, Boeck, p. 280, pl. xcix, fig. 2, Norway; Sars, Amphipoda of Norway.
- Metopa alderi*, Sp. Bate, p. 250, pl. lxxxvi; *spectabilis*, Sars, p. 251,

- pl. lxxxvii; *boeckii*, n. sp., syn. *M. bruzelii*, Boeck; *borealis*, Sars, in part, p. 252, pl. lxxxviii; *borealis*, Sars, p. 254, pl. lxxxix, fig. 1; *rubrovittata*, Sars, p. 255, pl. lxxxix, fig. 2; *pusilla*, n. sp., p. 256, pl. xc, fig. 1; *longicornis*, Boeck, p. 258, pl. xc, fig. 2; *tenuimana*, n. sp., p. 259, pl. xci, fig. 1; *affinis*, Boeck, p. 260, pl. xci, fig. 2; *bruzelii*, Goës, p. 261, pl. xcii, fig. 1; *sinuata*, n. sp., syn. *bruzelii*, Hans., in part, p. 263, pl. xcii, fig. 2; *propinqua*, n. sp., p. 264, pl. xciii, fig. 1; *leptocarpa*, Sars, p. 265, pl. xciii, fig. 2; *sölsbergi*, Schneider, p. 266, pl. xciv, fig. 1; *invalida*, n. sp., syn. *M. alderi*, Boeck, in part, p. 267, pl. xciv, fig. 2; *polleziana*, Sp. Bate, p. 269, pl. xciv, fig. 2; *robusta*, n. sp., p. 270, pl. xcvi, fig. 1; *palmata*, n. sp., p. 272, pl. xcvi, fig. 2; *longimana*, p. 273, pl. xcvi, fig. 1; *neglecta*, Hansen, p. 274, pl. xcvi, fig. 2; *nasuta*, Boeck, p. 276, pl. xcvi, fig. 1: from Norway; Sars, Amphipoda of Norway.
- Metopella*, n. g., suggested as new generic name for *Metopa longimana*, Sp. Bate, p. 274; Sars, Amphipoda of Norway.
- Probolium gregarium*, Sars, p. 245, pl. lxxxiv; *calcaratum*, Sars, p. 247, pl. lxxxv, Norway; Sars, Amphipoda of Norway.
- Stenothos marina*, Sp. Bate, p. 236, pl. lxxx; *microps*, n. sp., p. 237, pl. lxxx, fig. 1; *tenella*, Sars, p. 238, pl. lxxx, fig. 2; *monoculoides*, Mont., p. 240, pl. lxxxii, fig. 1; *brevicornis*, Sars, p. 241, pl. lxxxii, fig. 2; *megachir*, Boeck, p. 242, pl. lxxxiii, Norway; Sars, Amphipoda of Norway. *S. dollfusi*, n. sp., Azores, p. 260, figg. 6-10, CHEVREUX, Bull. Soc. Z. Fr. xvi.

### Aliarum Familiarum,

- Hyperia schizogeneios*, Stebbing, adult ♂ described; CHEVREUX, Bull. Soc. Z. Fr. xvii, p. 233.
- Pardaliscoides*, n. g. for *P. tenellus*, n. sp.; STEBBING, Rep. on the Amphipoda of the "Challenger," p. 1725 (1888).

## ISOPODA.

### ASELLIDÆ.

- Asellus coxalis*, Syria, p. 13, pl. ii, fig. 11, DOLLFUS, Rev. Biol. iv, n. sp.
- Jaropsis neo-zelandica*, Akaroa, p. 267, CHILTON, Tr. N. Z. Inst. xxiv, n. sp.
- Munna neo-zelandica*, New Zealand, p. 2, pls. i & ii, figg. 1-15; CHILTON, Tr. N. Z. Inst. xxiv, n. sp.

### BOPYRIDÆ.

- Probopyrus giardi* on *Palæmon placidus*, Sumatra, p. 557, pl. xxx, fig. 1, MAX WEBER, Zool. Ergeb. ii, n. sp.
- Pakegyge borrei*, Giard & Bonnier, on *Palæmon dispar*, Flores, p. 557, pl. xxx, fig. 5; *bonnieri*, n. sp., on *P. lar*, Celebes, p. 558, pl. xxx, fig. 4; *fluviatilis*, n. sp., on *P. lampropus*, Celebes, p. 559; *de mani*, n. sp., on *P. spinimanus*, Sumatra, p. 560; MAX WEBER, Zool. Ergeb. ii.

## ONISCIDÆ.

*Armadillidium scabrum*, n. sp., Seville, p. 165, with fig., DOLLFUS, Ann. Soc. Esp. (2) i. *A. sanctum*, n. sp., Syria, p. 4, pl. i, fig. 2; *granum*, n. sp., Syria, p. 5, fig. 3; DOLLFUS, Rev. Biol. iv. *A. granulatum*, Br., *serratum*, B.-L., *nasatum*, B.-L., *maculatum*, Risso, *simoni*, Dollf., *assimile*, B.-L., *esterelanum*, Dollf., *zenckeri*, Br., *pictum*, Br., *pulchellum*, Br., *vulgare*, Latr., *sordidum*, Dollf., *opacum*, Kochs, *alpinum*, Dollf., *quinquepustulatum*, B.-L., *depressum*, Br., *album*, Dollf., from France, figured and described, pp. 8-18, figg. 1-26; DOLLFUS, Feuill. Nat. xxii.

*Armadillo officinalis*, n. var. *syriaca*, p. 2, *albomarginatus*, n. sp., Syria, p. 3; DOLLFUS, Rev. Biol. iv.

*Mesarmadillo*, n. g., p. 385; *alluaudi*, p. 386, pl. vii, fig. 1, *marginatus*, p. 387, fig. 2, *tuberculatus*, p. 387, fig. 3, Assinie, DOLLFUS, Ann. Soc. Ent. Fr. lxi, n. spp.

*Metoponorthrus rufocinctus*, Corunna, p. 184, fig.; DOLLFUS, Ann. Soc. Esp. (2) i; *M. pica*, Syria, p. 10, pl. ii, fig. 9, *trifasciatus*, Tiberias, p. 11, pl. ii, fig. 10; DOLLFUS, Rev. Biol. iv : n. spp.

*Philoscia minima*, Granada, p. 187, fig., DOLLFUS, Ann. Soc. Esp. (2) i, n. sp.

*Porcellio magnificus*, n. sp., Alcazaba, p. 270, fig., *succinctus*, B.-L., p. 171, fig.; *P. nicklesi*, p. 171, fig., *bolivari*, p. 172, fig., *expansus*, p. 174, fig., *pyreneus*, p. 175, fig., *de bueni*, p. 176, fig., *amœnus*, p. 178, fig., *hispanus*, p. 179, fig., *nigro-granulatus*, p. 182, fig., Spain, n. spp.; DOLLFUS, Ann. Soc. Esp. (2) i. *P. inconspicuus*, Dead Sea, p. 5, pl. i, fig. 4, *fissifrons*, Syria, p. 7, pl. i, fig. 5, *barroisi*, Dead Sea, p. 7, pl. i, fig. 6, *contractus*, Syria, p. 8, pl. ii, fig. 7; *P. (Leptotrichus) pulchellus*, Syria, pl. ii, fig. 8; DOLLFUS, Rev. Biol. iv. : n. spp.

*Synarmadillo*, n. g., p. 388, for *S. clausus*, n. sp., Assinie, p. 388, pl. vii, fig. 4; DOLLFUS, Ann. Soc. Ent. Fr. lxi.

## CYMOTHOIDÆ, &amp;c.

*Ichyozenus jellinghausii*, Herkl., on species of *Puntius*, Sumatra, p. 545; MAX WEBER, Zool. Ergeb. ii.

*Lironeca sulcata*, Canary Is., p. 105, pl. x, figg. 1 & 2, KÆLBEL, Ann. Hof-museum Wien, vii, n. sp.

*Rocinela typus*, M.-Edw., Sumatra, p. 553; MAX WEBER, Zool. Ergeb. ii.

*Spheroma egregia*, Akaroa, p. 269, CHILTON, Tr. N. Z. Inst. xxiv, n. sp.

*Tachœa lucustris*, Sumatra, p. 551, MAX WEBER, Zool. Ergeb. ii.

## ENTOMOSTRACA.

## PHYLLOPODA.

## A. Recent Forms.

- Apus (Lepidurus) glacialis*, n. var. *spitzbergensis*, Spitzbergen, p. 291, BERNARD, The *Apodidae*.  
*Branchipus ledoulzi*, Syria, p. 25, fig. 1, BARROIS, Rev. Biol. v, n. sp.  
*Estheria hierosolymitans* and *gihoni*, figured and described, pp. 34-37; BARROIS, Rev. Biol. v.

## B. Fossil Forms.

- Anomolocaris*, n. g., p. 205, *canadensis*, p. 206, WHITEAVES, Can. Rec. v, n. sp.  
*Aptychopsis burruudeana*, n. sp., Moffat Beds, p. 101, pl. xv, fig. 1; *cordiformis*, n. sp., Lower Wenlock, p. 103, pl. xv, fig. 2; *lata*, n. sp., p. 104, pl. xv, fig. 6; *ovata*, n. sp., Dumfries, p. 108, fig. 4; *subquadrata*, n. sp., Upper Silurian, p. 110, fig. 20; *oblata*, n. sp., Gala group, p. 111, figg. 18, 21, & 23; JONES & WOODWARD, Palæont. Soc.  
*Discinocaris ovalis*, p. 121, pl. xvi, fig. 20, *undulata*, p. 122, pl. xvi, fig. 24, JONES & WOODWARD, Palæont. Soc., n. spp.  
*Peltocaris patula*, Moffat Series, p. 116, pl. xvi, figg. 10 & 11, *carruthersii*, syn. *aptychoides*, Woodw., Moffat Series, p. 116, pl. xvii, fig. 7, JONES & WOODWARD, Palæont. Soc., n. spp.

## CLADOCERA.

- Alona cilio-caudata*, S. W. Russia, p. 159, pl. iii, figg. 33-36, SOWINSKY, Zapiski. Kiev, xi. *A. lepida*, Wisconsin, p. 393, pl. xiii, fig. 19, BIRGE, Tr. Wisconsin Acad. viii: n. spp.  
*Grimaldina brazzai*, Congo, p. 214, figg. 1-3, RICHARD, Mém. Soc. Zool. v, n. sp.  
*Guernella raphaelis*, p. 218, figg. 4-6, RICHARD, Mém. Soc. Zool. v, n. sp.  
*Latonopsis occidentalis*, Wisconsin, p. 383, pl. xiii, figg. 1-5, BIRGE, Tr. Wisconsin Acad. viii, n. sp.  
*Macrothrix chevreuxi*, Rufisque, p. 530, GUERNE & RICHARD, Mém. Soc. Zool. v, n. sp.  
*Moina dubia*, Rufisque, p. 527, GUERNE & RICHARD, Mém. Soc. Zool. v, n. sp.  
*Moinodaphnia mocquersyi*, p. 222, figg. 7 & 8, RICHARD, Mém. Soc. Zool. v, n. sp.  
*Pleuroxus truncatus*, n. var. *Poppei*, p. 189; KLOCKE, Zool. Anz. xv.



## OSTRACODA.

*Cypris unguolata*, Algeria, p. 247, *blanchardi*, p. 252, MONIEZ, Mém. Soc. Zool. iv, n. spp.

*Leucocythere*, n. g., for *L. mirabilis*, p. 394; KAUFMAN, Zool. Anz. xv, n. sp.

*Pachycypris leuckarti*, p. 57, *incisa*, p. 59, S. America, CLAUS, Arb. z. Inst. Wien, x, n. spp.

## COPEPODA.

— *Argulus indicus*, Java, p. 544, fig. 1, MAX WEBER, Zool. Ergeb. ii, n. sp.

*Arietellus*, n. g. for *A. setosus*, n. sp., Naples, p. 415; GIESBRECHT, Copepoden des Golfes von Neapel.

*Belisarius vignieri*, p. 132, MAUPAS, C.R. cxv, p. 132, n. sp.

— *Caligus dakari*, p. 243, pl. i, figg. 1-4, BENEDEN, Bull. Ac. Belg. xxiii, n. sp.

*Caligera difficilis*, n. sp., p. 258, p. iv, BENEDEN, Bull. Ac. Belg. xxiii.

*Calina brachyura*, p. 249, pl. ii, BENEDEN, Bull. Ac. Belg. xxiii, n. sp.

*Candace varicans*, Naples, p. 439, GIESBRECHT, Copepoden des Golfes von Neapel, n. sp.

*Canthocamptus yahiai*, Algeria, p. 516, pl. vi, fig. 42, BLANCHARD & RICHARD, Mém. Soc. Zool. iv, n. sp.

*Chiridius*, n. g. for *C. poppei*, n. sp., Naples, p. 224; GIESBRECHT, Copepoden des Golfes von Neapel.

*Chlamys*, n. g. for *C. incisus*, n. sp., Dakar Bay, pp. 227-231, pl. ii, figg. 1-10; BENEDEN, Bull. Ac. Belg. xxiii.

*Copilia* (*Saphirinella*), genus monographed, with chart of geographical distribution; DALL, Zool. Jahrb. vi.

*Cyclops hamatus*, *kiewensis*, *brevisetosus*, *palustris*, *poggenpolii*, *uljanini*, *trouchanowi*, *kovostyschewi*, n. spp. from S. W. Russia, mentioned, but apparently not described; SOWINSKY, Zapiski. Kiev, xi. *C. dybowskii*, n. sp., Germany, p. 163, LANDÉ, Mém. Soc. Zool. v.

*Dactylopus jugurtha*, n. sp., Algeria, p. 519, pl. vi, figg. 26-41, BLANCHARD & RICHARD, Mém. Soc. Zool. iv.

*Diaptomus sancti-patricii*, Connemara, p. 99, pl. xiv, figg. 5-7, *hircus*, Orkney, p. 100, pl. x, figg. 2-4, BRADY, Nat. Hist. Tr. North Durham, xi; *D. schmackeri*, Lake Tahoe (China), p. 149, POPPE & RICHARD, Bull. Soc. Z. Fr. xvii : n. spp.

*Euchaeta acuta*, p. 262, *spinosa*, p. 263, Naples, GIESBRECHT, Copepoden des Golfes von Neapel, n. spp.

*Grypoptis ranarum*, Central Africa, pp. 152-154; STUHLMANN, Zool. Jahrb. vi, n. sp.

*Hemicalanus acutifrons*, *fertilis*, *ornatus*, *spiniceps*, Naples, pp. 398 & 399, GIESBRECHT, Copepoden des Golfes von Neapel, n. spp.

- Herpyllobiidae*, n. fam. for *Rhizorhina*, n. g., Ent. Med. 1892, pp. 207-231.
- Ilyopryllus*, syn. *Abacola*, *jousseau mei*, n. sp., p. 69; RICHARD, Bull. Soc. Z. Fr. xvii.
- Laophonte mohammed*, Algeria, p. 526, BLANCHARD & RICHARD, Mém. Soc. Zool. iv, n. sp.
- Lichomolgus agilis*, Firth of Forth, p. 201, pl. xv, figg. 1-14, SCOTT, T., Ann. N. H. x; *L. aberdonensis*, E. of Scotland, p. 149, pl. vi, figg. 1-12, SCOTT, T. & A., Ann. Scott. Nat. Hist. Soc. 1892: n. spp.
- Mesochra lybica*, Algeria, p. 523, pl. vi, fig. 16, BLANCHARD & RICHARD, Mém. Soc. Zool. iv, n. sp.
- Metridia normani*, Faroe Channel, p. 345, GIESBRECHT, Copepoden des Golfes von Neapel, n. sp.
- Monstrilla gracilicauda*, *longiremis*, Naples, p. 589, GIESBRECHT, Copepoden des Golfes von Neapel, n. spp.
- Möbianus*, n. g., for *M. gyrans*, n. sp., Naples, GIESBRECHT, p. 205, Copepoden des Golfes von Neapel.
- Nogagus angustatus*, BENEDEN, Bull. Ac. Belg. xxiv, n. sp.
- Oncæa minuta* and *subtilis*, Naples, p. 603, GIESBRECHT, Copepoden des Golfes von Neapel, n. spp.
- Pandarus cranchii*, male described and figured, p. 221, pl. i, figg. 1-4; BENEDEN, Bull. Ac. Belg. xxiii.
- Pupulina flores*, p. 254, pl. iii, BENEDEN, Bull. Ac. Belg. xxiv, n. sp.
- Rhizorhina*, n. g. (*Herpyllobiidae*) for *B. ampeliscæ*, n. sp., Denmark, pp. 231 & 232, pl. iii; HANSEN, Ent. Med. 1892.
- Rotania*, n. g. for *R. flava*, n. sp., Naples; GIESBRECHT, p. 616, Copepoden des Golfes von Neapel.
- Sapphirina lactens*, *pyrosomatis*, *maculosa*, Naples, GIESBRECHT, pp. 641-643, Copepoden des Golfes von Neapel, n. spp.
- Scolecithrix vittata*, *profunda*, *longipes*, *dentata*, *tenuiserrata*, *dubia*, *auropecten*, Naples, GIESBRECHT, Copepoden des Golfes von Neapel, n. spp.
- Synapticola*, n. g. for *S. teres*, n. sp., on *Synapta kefersteinii*, pp. 31-42; VOIGT, Z. wiss. Zool. liii.
- Thaumaleus clapedii* and *reticulatus*, Naples, GIESBRECHT, p. 585, Copepoden des Golfes von Neapel, n. spp.
- Xanthocalanus agilis* and *minor*, Naples, GIESBRECHT, pp. 286-292, Copepoden des Golfes von Neapel, n. spp.

## CIRRIPEDIA.

## LEPADIDÆ.

- Alepa japonica*, Japan, p. 125, AURIVILLIUS, Cefv. Ak. Förh. 1892, n. sp.
- Dichelaspis cor*, S. Africa, p. 124, *bullula*, Java, p. 125, AURIVILLIUS, Cefv. Ak. Förh. 1892, n. spp.

- Lepas testudinata*, S. Africa, p. 123, AURIVILLIUS, Cefv. Ak. Förh. 1892, n. sp.  
*Orynapsis patens*, W. Indies, p. 125, AURIVILLIUS, Cefv. Ak. Förh. 1892, n. sp.  
*Pacilasma vagans*, off Nautilus, p. 124, AURIVILLIUS, Cefv. Ak. Förh. 1892, n. sp.  
*Scalpellum gemma*, Greenland, *scorpio*, China Sea, p. 126, *gibberum*, La Plata, p. 127, *calcaratum*, Pacific Ocean, p. 128, *septentrionale*, North Sea, p. 128, *obesum*, North Sea, p. 129, *erosum*, N. W. Atlantic, p. 129, *aduncum*, on a *Phoxichilidium*, p. 130, *luridum*, Baffin Bay, p. 130, *grönlandicum*, Greenland, *prunulum*, W. Indies, p. 131, *galea*, La Plata, p. 132, *stratum*, W. Indies, p. 132, AURIVILLIUS, Cefv. Ak. Förh. 1892, n. spp.

## LITHOGLYPTIDÆ (n. fam.).

- Lithoglyptes*, n. g., for *L. indicus*, p. 133, *bicornis*, p. 134, *ampulla*, p. 134, Javan Seas, AURIVILLIUS, Cefv. Ak. Förh. 1892, n. spp.

## PANTOPODA.

## TITLES.

- CARPENTER, G. H. (1) Report on the *Pycnogonida* collected in Torres Straits by Prof. A. C. Haddon. Sci. P. R. Dubl. Soc. vii (n.s.) pp. 552-558, pl. xxii.  
 —. (2) Supplement. *Op. cit.* viii, pp. 21-26, pl. ii.  
 GAUBERT, P. Autotomie chez les Pycnogonides. Bull. Soc. Z. Fr. xvii, p. 224.  
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 \*MORGAN, T. H. The relationships of the Sea Spiders. Biol. Lect. Marine Biol. Lab. Woods Holl. pp. 142-167. (*Qf. Zool. Anz.* xv, p. 43.)  
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TOPSENT, E. Les Pycnogonides provenant des campagnes du yacht "l'Hirondelle" [Gulf of Gascoyn, Azores, &c.]. Bull. Soc. Z. Fr. xvi, p. 176.

No new species.

#### SYSTEMATIC.

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\* No special attention has been devoted to this Section.

# XI. ARACHNIDA.

BY

R. I. ПОСЛОК.

## ARRANGEMENT OF RECORD.

A few changes have been made in the treatment of this section of the ZOOLOGICAL RECORD. The first part contains a complete list of the titles. The second is devoted to papers treating of the anatomy, embryology, physiology, habits, &c. The third part deals similarly with distribution, and the fourth with the purely systematic aspect of the subject. In the latter the sequence of the orders adopted is the same as that put forward in the Ann. N. H. for Jan., 1893; while the families of the larger groups, such as the *Araneæ* and the *Acari*, and the genera that they contain, have been, for the sake of convenience, arranged alphabetically.

For reasons already stated under the heading *Crustacea*, the *Pantopoda* and the *Gigantostaca* have been transferred from the *Arachnida* to that section of the RECORD which deals with the *Crustacea*.

I. TITLES OF PAPERS, p. 1.	IV. SYSTEMATIC
II. ANATOMY, EMBRYOLOGY, PHYSIOLOGY, HABITS, &c., p. 11.	(A.) <i>Scorpiones</i> , p. 14.
III. DISTRIBUTION, p. 13.	(B.) <i>Pedipalpi</i> , p. 14.
	(C.) <i>Araneæ</i> , p. 14.
	(D.) <i>Pseudoscorpiones</i> , p. 33.
	(E.) <i>Opiliones</i> , p. 34.
	(F.) <i>Acari</i> , p. 35.

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\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

## 2 *Arachn.*

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## PEDIPALPI, AMBLYPYGI.

According to SIMON, Ann. Soc. Ent. Fr. lxi, pp. 45-52, this suborder contains the single family *Tarantulidae*, which is divided into the *Charontineæ*, *Phryniscinæ*, and *Tarantulinæ*. The *Charontineæ* contain *Charon*, *Catageus*, and the new genera *Charinus*, based upon *australianus*, L. Koch, and *Sarax*, of which *brachydactylus*, Simon, is the type, p. 48. The *Phryniscinæ* contain *Phryniscus* and *Damon*, and the *Tarantulinæ*, *Admetus* and *Tarantula*, p. 51, pl. ii, figg. 9-16.

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- Salticus formicarius*, De G., Europe, p. 16, pl. i, fig. 1, *ichneumon*, Simon, Zanzibar, p. 17, pl. i, fig. 7, *ephippiatus*, Hentz, Eastern United States, p. 18, fig. 2, *plataleoides*, Cambr., Ceylon, p. 33, pl. iii, fig. 1; PECKHAM, Nat. Hist. Soc. Wisconsin, ii.
- S. formosus*, pp. 230-233, *pecterosus*, with n. var. *sternodis*, Sumatra, pp. 233-239, *alticeps*, pp. 239-242, *leptognathus*, Java, pp. 242-246, THORELL, Ann. Mus. Genov. xxxi; *modestus*, Andaman Is., p. 235, THORELL, Ann. N. H. (6) ix; *S. centralis*, Central America, p. 19, pl. i, fig. 6, *armatus*, Lima, p. 20, pl. vii, fig. 6, *desertus*, Algiers, p. 21, pl. ii, fig. 6, *tristis*, Simon, Arabia, p. 22, pl. iii, fig. 2, *simplex*, 1892 [VOL. XXIX.]

- Madagascar, p. 23, pl. i, fig. 4, *augustus*, Madagascar, p. 24, pl. i, fig. 5, *electricus*, Madagascar, p. 25, pl. i, fig. 3, *gracilis*, Madagascar, p. 26, pl. ii, fig. 1, *robustus*, Burma, p. 27, pl. ii, fig. 2, *nemorensis*, Burma, p. 28, pl. ii, fig. 3, *dubius*, p. 29, pl. ii, fig. 4, *niger*, p. 30, pl. ii, fig. 7, *edentulus*, p. 31, pl. ii, fig. 5, *bellicosus*, p. 32, pl. ii, fig. 11, Manilla, *providens*, p. 34, pl. iii, fig. 3, *imbellis*, p. 36, pl. ii, fig. 10, *spissus*, p. 37, pl. ii, fig. 8, Ceylon, PECKHAM, Nat. Hist. Soc. Wisconsin, ii, n. spp.
- Sarinda*, n. g., p. 40, for *S. nigra*, Chapoda, Brazil, p. 40, pl. iii, fig. 5, *lata*, Rio Janeiro, p. 41, pl. iii, fig. 6, n. spp., PECKHAM, Nat. Hist. Soc. Wisconsin, ii.
- Semora*, n. g., p. 68, for *S. napæa*, n. sp., Rio Janeiro, p. 69, pl. v, fig. 6 ; PECKHAM, Nat. Hist. Soc. Wisconsin, ii.
- Simonella americana*, Peckh., Guatemala, p. 81, pl. vii, fig. 3, *myrmeciformis*, Tacx., Brazil, p. 81, pl. vii, fig. 4, *bicolor*, n. sp., Venezuela, p. 83, pl. vii, fig. 5 ; PECKHAM, Nat. Hist. Soc. Wisconsin, ii.
- Synageles dalmatensis*, Keys., Europe, p. 60, *venator*, Luc., Algiers, p. 61, pl. v, fig. 1, *albotrimaculatus*, Luc., Algiers, p. 62, *scorpiona*, Hentz, New York, p. 6, pl. v, fig. 1, *picata*, Hentz, United States, p. 64, pl. v, fig. 2, *americana*, n. sp., E. United States, p. 65, pl. v, fig. 1 ; PECKHAM, Nat. Hist. Soc. Wisconsin, ii.
- Synemosyna capito*, pp. 215-217, *debilis*, pp. 218 & 219, n. spp., Java, THORELL, Ann. Mus. Genov. xxxi. *S. formica*, Hentz, United States, p. 77, pl. vi, fig. 4, *hantzii*, p. 78, pl. vii, fig. 2, *lauretta*, p. 79, pl. vii, fig. 1, Chapoda, n. spp. ; PECKHAM, Nat. Hist. Soc. Wisconsin, ii.
- Tupinattus*, n. g. for *melanognathus*, Luc., p. 306 ; THORELL, Ann. Mus. Genov. xxxi.
- Toxus mandibularis*, n. sp. ?, Java, pp. 220-224 ; THORELL, Ann. Mus. Genov. xxxi.
- Viciria hasseltii*, Thor., Celebes, pp. 389-392, *albo-limbata*, Sim., Sumatra, *terebrifera*, n. sp., Sumatra, pp. 397-401 ; THORELL, Ann. Mus. Genov. xxxi.
- Zuniga*, n. g., p. 42, for *Z. magna*, Santarem, p. 43, pl. iv, fig. 1, *severa*, Caraccas, p. 44, pl. iii, fig. 7, n. spp., PECKHAM, Nat. Hist. Soc. Wisconsin, ii.

## CTENIDÆ.

- Acanthoctenus dimidiatus*, Sumatra, pp. 142-145, *latus*, Sarawak, pp. 146-148, THORELL, Ann. Mus. Genov. xxxi : n. spp. According to SIMON, Hist. Nat. des Araignées, p. 229, this genus is the sole representative of the subfamily *Acanthacteninae* of the family *Zoropsidæ*.
- Ctenus valvularis*, Van Hass., Sumatra, pp. 135-139, *pulvinatus*, n. sp., Sarawak, pp. 139-142 ; THORELL, Ann. Mus. Genov. xxxi.
- C.* (syn. *Phoneutria*, *Microctenus*, *Anabita*, *Isoctenus*) *nigriventer*, Rio Grande, p. 144, pl. iv, fig. 98 ; *vehemens*, Espirito Santo, p. 145,

fig. 99, *velox*, Neu Freiburg, p. 147, fig. 100, *brevipes*, p. 148, fig. 101, *minuscule*, p. 149, fig. 102, *longipes*, p. 150, fig. 103, *teniatus*, p. 151, fig. 104, Rio Grande, *griseus*, Taquara, p. 152, fig. 195, *medius*, Rio Grande, p. 153, fig. 106, KEYSERLING, Spinnen Amerikas, 1891, n. spp. According to KEYSERLING *Otenus* is placed in the subfamily *Cteninæ* of the family *Drassidæ*.

*Nydia*, n. g., p. 130, for *N. punctata*, n. sp., Sumatra, p. 131; THORELL, Ann. Mus. Genov. xxxi.

### DICTYNIDÆ (or AMAUROBIIDÆ).

*Amaurobius occidentalis*, n. sp., Portugal, p. cxciv, SIMON, Bull. Soc. Ent. Fr. 1892; *A. jheringii*, n. sp., Rio Grande, p. 154, pl. iv, fig. 107, KEYSERLING, Spinnen Amerikas. *A. similis*, Blk., and *fenestralis*, Ström., figured and compared, p. 389, pls. xxi, figg. 10 & 11; F. CAMBRIDGE, Ann. N. H. (6) x.

*Atelolathys*, n. g. for *A. varia*, n. sp., Ceylon, p. 243; SIMON, Hist. Nat. des Araignées.

*Auzimus*, n. g. for *Amaurobius dentichelis*, Sim., p. 239; SIMON, Hist. Nat. des Araignées.

*Callea*, n. g. for *C. paupercula*, n. sp., Argentine, p. 239; SIMON, Hist. Nat. des Araignées.

*Dictyna foxii*, Marx, p. 28, pl. i, fig. 78; BANKS, P. Ac. Philad. 1892.

*D. maxima*, p. 28, pl. i, fig. 79, & pl. iv, fig. 79, *decorata*, p. 28, pl. i, fig. 81, & pl. iv, fig. 81, *dubia*, p. 29, pl. i, fig. 82, Cayuga Lake, BANKS, P. Ac. Philad. 1892, n. spp. *D. philoteichus*, McCook, is synonymous with *D. civica*, Luc., p. 235; SIMON, Hist. Nat. des Araignées.

*Neophanes*, Marx, p. 29, *pallidus*, Marx, Cayuga Lake, p. 29, pl. iii, fig. 86; BANKS, P. Ac. Philad. According to SIMON, Hist. Nat. des Araignées, p. 243, this genus is a synonym of *Scotolathys* of Simon.

*Protadia*, n. g. for *Dictyna patula*, Sim., p. 239; SIMON, Hist. Nat. des Araignées.

*Titanæca sequerai*, Portugal, p. cxcv, SIMON, Bull. Soc. Ent. Fr. 1892; *T. luteipes*, Rio Grande, p. 156, pl. iv, fig. 108, KEYSERLING, Spinnen Amerikas : n. spp. SIMON, Hist. Nat. des Araignées, p. 237, unites this genus with *Amaurobius*.

### DRASSIDÆ.

Subfam. DRASSINI (? all the genera).

*Agræca ornata*, Cayuga Lake, p. 23, pl. i, fig. 68, BANKS, P. Ac. Philad. 1892, n. sp.

*Chiracanthium subflavum*, Blck., syn. *edentulum*, L. Koeh, *keyserlingii*, Beck., Brazil, p. 37, pl. i, fig. 15; KEYSERLING, Spinnen Amerikas.

*C. montanum*, Neu Freiburg, p. 38, fig. 16, *brevipes*, Serra Vermella, p. 39, fig. 16a, KEYSERLING, Spinnen Amerikas, n. spp.



- Clubiona tibialis*, Em., p. 20, pl. i, fig. 62, *abbotti*, Koch, p. 21, fig. 65 ; BANKS, P. Ac. Philad. 1892.
- C. pygmæa*, p. 21, fig. 64, *lenta*, p. 21, fig. 66, Cayuga Lake, BANKS, P. Ac. Philad. 1892 ; *C. chevronia*, Canterbury (N. Z.), p. 231, *viridicomâ*, Mt. Cook, p. 233, URQUHART, Tr. N. Z. Inst. xxiv : n. spp.
- Drassus humilis*, n. sp., Cayuga Lake, p. 20, pl. i, fig. 60, BANKS, P. Ac. Philad. 1892 ; *D. brasiliânus*, Rio Grande, p. 34, pl. i, fig. 13, *agelas-tus*, Taquara, p. 35, fig. 14, KEYSERLING, Spinnen Amerikas : n. spp.
- Echemus pulcher*, Rio Grande, p. 31, pl. i, fig. 10, *major*, Rio Grande, p. 32, fig. 11, *medius*, Fugenda Sergio Potta de Castro, p. 33, fig. 12, KEYSERLING, Spinnen Amerikas, n. spp.
- Eilica*, n. g., p. 29, for *E. modesta*, n. sp., Blumenau, p. 30, pl. i, fig. 9 ; KEYSERLING, Spinnen Amerikas.
- Goldia*, n. g., p. 45, for *G. obscura*, n. sp., Espirito Santo, p. 45, pl. i, fig. 20 ; KEYSERLING, Spinnen Amerikas.
- Gnaphosa humilis*, Cayuga Lake, p. 19, pl. i, fig. 59, BANKS, P. Ac. Philad. 1892 ; *G. barroisi*, Syria, p. 81, SIMON, Rev. Biol. v : n. spp.
- Gytha*, n. g., p. 27, for *G. obscura*, n. sp., Rio Grande, p. 28, pl. i, fig. 8 ; KEYSERLING, Spinnen Amerikas.
- Hypsinotus vitiosus*, Rio Grande, p. 51, pl. ii, fig. 24, *parvus*, Serra Vermella, p. 52, pl. ii, fig. 25, *alticeps*, Espirito Santo, p. 53, fig. 26, *flavipes*, Rio Minas, p. 54, fig. 27, *botucatensis*, Sao Paulo, p. 55, fig. 28, *gracilis*, Rio Grande, p. 56, fig. 29, *nitens*, Neu Freiburg, &c., p. 57, fig. 30, KEYSERLING, Spinnen Amerikas.
- Leptodrassus seriatus*, Ceylon, p. 294, pl. xi, fig. 16, KARSCH, B. E. Z. xxxvi, n. sp.
- Micaria formicoides*, Cayuga Lake, p. 14, pl. i, fig. 51, BANKS, P. Ac. Philad. 1892, n. sp.
- Odo pulcher*, Palmeiras, p. 42, pl. i, fig. 18, *similis*, Corcovado, KEYSERLING, Spinnen Amerikas, n. spp.
- Onychocryptus*, n. g., p. 294, for *O. mutillarius*, n. sp., Ceylon, p. 295, pl. xi, fig. 17 ; KARSCH, B. E. Z. xxxvi.
- Phrurolithus minutus*, p. 22, pl. i, fig. 67, *palustris*, p. 23, fig. 70, Cayuga Lake, BANKS, P. Ac. Philad. 1892, n. spp.
- Prosthesima rufula*, p. 17, pl. i, fig. 55, *frigida*, p. 17, fig. 56, *immacula*, p. 18, fig. 58, *blanda*, p. 18, fig. 57, *minima*, p. 19, fig. 69, Cayuga Lake, BANKS, P. Ac. Philad. 1892, n. spp.
- Radulphius*, n. g., for *R. laticeps*, Serra Vermella, p. 47, pl. i, fig. 21, *bicolor*, Neu Freiburg, p. 48, fig. 22, KEYSERLING, Spinnen Amerikas, n. spp.
- Stasina nalandica*, Nalanda (Ceylon), p. 293, pl. xi, fig. 15, KARSCH, B. E. Z. xxxvi, n. sp.
- Teminius brasiliânus*, Rio Grande, p. 40, pl. i, fig. 17, KEYSERLING, Spinnen Amerikas, n. spp.
- Thargalia agilis*, p. 15, pl. i, fig. 52, *perplexa*, p. 15, fig. 53, *fullax*, p. 16, fig. 54, Cayuga Lake, BANKS, P. Ac. Philad. 1892, n. spp.

*Trachelas flavipes*, Rio Grande, p. 59, pl. ii, fig. 31a, *foraminosus*, Rio Grande, p. 60, fig. 32, *gracilis*, Blumenau, p. 61, fig. 33, *rugosus*, Serra Vermella, &c., p. 62, fig. 34, *robustus*, Neu Freiburg, p. 64, fig. 35, *vitiosus*, Serra Vermella, p. 65, fig. 36, KEYSERLING, Spinnen Amerikas, n. spp.

## Subfam. ANYPHÆNINI.

*Abuzaida*, n. g., p. 132, for *A. striata*, n. sp., Neu Freiburg, p. 133, pl. iv, fig. 91; KEYSERLING, Spinnen Amerikas.

*Anypheana censoria*, Serra Vermella, p. 84, pl. ii, fig. 48, *procera*, p. 86, fig. 49, *affabilis*, Brazil, p. 87, fig. 50, *lenis*, Neu Freiburg, p. 88, fig. 51, *pygmaea*, p. 90, fig. 52, *longipes*, p. 91, fig. 53, *virgata*, p. 92, fig. 54, Brazil, *cita*, Palmeiras, p. 94, fig. 55, *violens*, Serra Vermella, p. 95, fig. 56, *subrubra*, Blumenau, p. 97, fig. 57, *helvola*, Rio Grande, p. 98, fig. 58, *rubro-maculata*, p. 99, fig. 59, *cluro-vittata*, Neu Freiburg, p. 100, fig. 60, *unicolor*, p. 101, fig. 61, *striolata*, p. 102, fig. 62, *robusta*, p. 103, fig. 63, *grisea*, p. 104, fig. 64, *tæniata*, p. 105, fig. 65, *fortis*, Fazenda Calvario, p. 106, *formosa*, Corcovado, p. 107, fig. 67, *imbecilla*, Corcovado, p. 108, fig. 68, *angusticeps*, p. 109, fig. 69, *suspiciosa*, p. 110, fig. 70, *glabra*, p. 111, fig. 71, Serra Vermella, *tensa*, p. 112, fig. 72, *rubella*, p. 113, fig. 73, Neu Freiburg, *parvula*, Serra Vermella, p. 114, fig. 74, *tensipes*, Neu Freiburg, p. 115, fig. 75, *frenata*, p. 116, fig. 76, *punctata*, p. 117, fig. 77, *opertanea*, p. 118, p. 78, *gentilis*, p. 119, fig. 79, *concolor*, p. 120, fig. 80, Neu Freiburg, *recentissima*, Blumenau, p. 121, fig. 81, *tenuipes*, Serra Vermella, p. 122, fig. 82, *pellucida*, Neu Freiburg, p. 122, fig. 83, *variabilis*, p. 123, fig. 84, *diversicolor*, p. 124, fig. 85, Neu Freiburg, KEYSERLING, Spinnen Amerikas, n. spp.

*Arachosia freiburgensis*, Neu Freiburg, p. 126, pl. iv, fig. 86, *honesta*, Rio Grande, p. 127, fig. 87, KEYSERLING, Spinnen Amerikas, n. spp.

*Aysa*, n. g., for *A. prospera*, Rio Grande, p. 129, pl. iv, fig. 88, *gracilipes*, p. 130, fig. 89, *fulviceps*, p. 131, fig. 90, Rio Grande, KEYSERLING, Spinnen Amerikas, n. spp.

*Gayenna x-signata*, p. 138, pl. iv, fig. 64, *marginata*, p. 139, fig. 95, *fusco-tæniata*, p. 140, fig. 96, Rio Grande, KEYSERLING, Spinnen Amerikas, n. spp.

*Samuza*, n. g., p. 134, for *S. præsignis*, p. 135, pl. iv, fig. 22, *minuta*, p. 136, fig. 93, Rio Grande, KEYSERLING, Spinnen Amerikas, n. spp.

## Subfam. CORINNINÆ.

*Castianeira* (syn. *Corinna*), *valida*, Espirito Santo, p. 68, pl. ii, fig. 37, *varia*, Blumenau, p. 69, fig. 38, *pyriformis*, Neu Freiburg, p. 70, fig. 39, *obscura*, Espirito Santo, p. 71, fig. 40, *vittata*, Blumenau, p. 73, fig. 41, *maculata*, Neu Freiburg, p. 74, fig. 42, *brevis*, Corcovado, p. 75, fig. 43, KEYSERLING, Spinnen Amerikas, n. spp.

*Tylophora onerosa*, Palmeiras, p. 76, pl. ii, fig. 44, KEYSERLING, Spinnen Amerikas, n. sp.

## Subfam. MYRMECHINÆ.

*Myrmecia vertebrata*, W., and *nigra*, Perty, Brazil, pp. 78-80, pl. ii, figg. 45 & 46; KEYSERLING, Spinnen Amerikas.

*M. obscura*, Rio Janeiro, p. 81, pl. ii, fig. 47, KEYSERLING, Spinnen Amerikas, n. sp.

## DYSDERIDÆ.

*Nops meridionalis*, n. sp., Taquara, p. 24; KEYSERLING, Spinnen Amerikas.

*Segestria euterii*, Canterbury, p. 230, URQUHART, Tr. N. Z. Inst. xxiv, n. sp.

## EPEIRIDÆ (ARGIOPIDÆ OR EUETHEIDÆ).

*Argiope multi-fasciata*, Singapore, p. 226, THORELL, Bull. Soc. Ent. Ital. xxiv; *A. plagiata*, Minikoy, p. 279, pl. x, fig. 5, *trivittata*, Ceylon, p. 280, fig. 6, KARSCH, B. E. Z. xxxvi : n. spp.

*Argyropeira fibulata*, Singapore, p. 224, THORELL, Bull. Soc. Ent. Ital. xxiv, n. sp.

*Bunocrania ? picta*, Singapore, p. 251, THORELL, Bull. Soc. Ent. Ital. xxiv, n. sp.

*Epeira beccarii*, Thor., described and figured, with anare, pls. v & va; WORKMAN, Malaysian Spiders.

*E. anaspasta*, p. 234, *perpolita*, p. 237, Singapore, THORELL, Bull. Soc. Ent. Ital. xxiv; *E. obtusata*, Ceylon, p. 283, pl. x, fig. 7, KARSCH, B. E. Z. xxxvi; *E. invisibilis*, Dunedin, p. 239, *sublutia*, Dunedin, p. 241, *simulata*, Stewart I., p. 242, *ventriosa*, Raglan, p. 243, *lucisca*, Hastwell, p. 245, URQUHART, Tr. N. Z. Inst. xxiv : n. spp.

*E. (Cyclosa) oatesii*, Andaman Is., p. 228, THORELL, Ann. N. H. (6) ix; *E. confragosa*, p. 239, *pellux*, p. 243, *micula*, p. 245, Singapore.

*E. (Cyrtophora) ecsematica*, Singapore, p. 231, THORELL, Bull. Soc. Ent. Ital. xxiv : n. spp.

*Drezelia*, n. g., p. 127, for *Epeira directa*, Hentz., syn. *rubella*, Hentz., *tetragnathoides*, Cambr., *deludens*, Marx, p. 128; MCCOOK, P. Ac. Philad. 1892.

*Gastracantha doria*, and *brevispina*, figured on pls. vii & viii; WORKMAN, Malaysian Spiders.

*Meta adpersata*, Ceylon, p. 284, pl. x, fig. 8; KARSCH, B. E. Z. xxxvi, n. sp.

*Milonia obtusa*, Singapore, p. 248, THORELL, Bull. Soc. Ent. Ital. xxiv, n. sp.

- Nephila transvaalica*, Pretoria, p. 180, pl. v, fig. 4, Pocock, in Distant's Naturalist in the Transvaal, n. sp.  
*Poltys apiculatus*, Singapore, p. 228, Thorell, Bull. Soc. Ent. Ital. xxiv, n. sp.  
*Tetragnatha pallida*, Cayuga Lake, p. 51, pl. v, fig. 88, Banks, P. Ac. Philad. 1892; *T. geniculata*, Ceylon, p. 286, *armata*, Passelawa, p. 287, *planata*, Jaffna, p. 288, *determinata*, Minikoy, p. 288, *foveata*, Jaffna, p. 289, Karsch, B. E. Z. xxxvi : n. spp.  
*Zilla x-notata*, Cl., and *atrica*, C. Koch, compared and figured, p. 395, pl. xx, figg. 3 & xxi, and 8 & 9; F. Cambridge, Ann. N. H. (6) x.

## ERESIDÆ, FILISTATIDÆ and HYPOCHILIDÆ.

- Ectatostica*, n. g. for *Hypochilus davidi*, Sim.; Simon, Hist. Nat. des Araignées.  
*Filistata garciai*, Grotto de San Mateo (Philippines), p. 37, Simon, Ann. Soc. Ent. Fr. xli, n. sp.  
*Stegodyphus sarasinorum*, Peradenia, p. 275, Karsch, B. E. Z. xxxvi, n. sp.

## LEPTONETIDÆ.

- Synopsis of the genera, p. 39; Simon, Ann. Soc. Ent. Fr. lxi.  
*Psiloderces*, n. g., p. 40, for *egeria*, n. sp., Grotto of Calapnitan, p. 40, Simon, t. c.  
*Theoclia microphthalma*, n. sp., Grotto of Antipolo (Philippines), p. 40; Simon, Ann. Soc. Ent. Fr. lxi.

## LYCOSIDÆ.

- Dolomedes lepidus*, Sumatra, pp. 149-151, Thorell, Ann. Mus. Genov. xxxi, n. sp.  
*Diapontia uruguayensis*, Keys., Rio Grande, p. 257, pl. x, fig. 193; Keyserling, Spinnen Amerikas.  
*Lycosa pusiola*, Sumatra and Sarawak, pp. 157-161, *sumatrana*, Sumatra, pp. 161-166, *pinangensis*, Pinang, pp. 166-169, *ragula*, pp. 169-173, *rabulana*, pp. 173-176, *ipnochera*, pp. 176-178, Sumatra, Thorell, Ann. Mus. Genov. xxxi; *L. rura*, Rio Grande, p. 264, pl. x, fig. 199, Keyserling, Spinnen Amerikas; *L. similis*, pl. ii, fig. 30, *rufiventris*, pl. iii, fig. 35, *humilis*, fig. 36, *crudelis*, fig. 37, *immaculata*, pl. v, fig. 38, *exilis*, pl. 1, fig. 39, *oblonga*, pl. iii, fig. 40, pp. 64-68, Cayuga Lake, Banks, P. Ac. Philad. 1892; *L. maura*, Mt. Cook, p. 246, Urquhart, Tr. N. Z. Inst. xxiv : n. spp.  
*Lycosella*, n. g., pp. 178 & 179, for *L. tenera*, with varr. *bisulcata*, pp. 179-183, *minuta*, pp. 183-185, n. spp., Sumatra, Thorell, Ann. Mus. Genov. xxxi.

- Passiena*, n. g., p. 186, for *P. spinicrus*, n. sp., Pinang, pp. 186–190 ; THORELL, Ann. Mus. Genov. xxxi.
- Pardosa annulata*, pl. i, fig. 41, *venusta*, fig. 42, *gracilis*, figs. 43 & 50, *mæsta*, pl. iii, fig. 44, *obsoleta*, fig. 45, pp. 68–71, Cayuga Lake ; BANKS, P. Ac. Philad. 1892, n. spp.
- Pirata montanoides*, pl. i, fig. 46, *agilis*, fig. 47, *exigua*, fig. 48, pp. 71 & 72, Cayuga Lake, BANKS, P. Ac. Philad. 1892 ; *P. velox*, Rio Grande, p. 265, fig. 200, KEYSERLING, Spinnen Amerikas : n. spp.
- Tarantula fragilis*, n. sp., Sumatra, pp. 154–157, THORELL, Ann. Mus. Genov. xxxi ; *thorellii*, Keys., syn. *sternalis*, Bert., Rio Grande, p. 259, pl. x, fig. 195 ; *nervosa*, Rio Grande, p. 260, fig. 196, *venefica*, Rio Grande, p. 261, fig. 197a, *auricoma*, Taquara, p. 262, fig. 198, n. spp., KEYSERLING, Spinnen Amerikas.
- Tetragonophthalma obscurum*, Taquara, p. 256, pl. x, fig. 192, KEYSERLING, Spinnen Amerikas, n. sp.
- Trochosa inops*, Sumatra, pp. 151–154, THORELL, Ann. Mus. Genov. xxxi ; *pictipes*, Rio Grande, p. 266, pl. x, fig. 201, KEYSERLING, Spinnen Amerikas, n. spp.

## ECOBIDÆ.

- Omanus maculatus*, n. sp., Blumenau, &c., p. 160, pl. v, fig. iii ; KEYSERLING, Spinnen Amerikas. According to SIMON, Hist. Nat. des Araignées, p. 247, this genus is a synonym of *Ecobius*.

## OXYOPIDÆ.

- Oxyopes ceylonicus*, n. sp., Ceylon, p. 290, pl. xii, fig. 22, KARSCH, B. E. Z. xxxvi ; *O. lineatipes* and *gemellus*, Pinang, figured by WORKMAN, Malaysian Spiders, *lineatipes*, C. Koch, Sumatra, pp. 190–194 ; *O. javanus*, Java, pp. 195–198, *longinguus*, ? Indo-Malaysia, pp. 198–200, *annulipes*, Sumatra, pp. 200–202, *providens*, Sumatra, pp. 202–204, *setipes*, Sarawak, pp. 204–206, *obtusus*, Sumatra, pp. 207–209, *fronto*, Sumatra, pp. 209–211, *latifrons*, Sumatra, pp. 211–213, n. spp., THORELL, Ann. Mus. Genov. xxxvi ; *O. constrictus*, Rio Grande, p. 268, pl. x, fig. 202, *rubrosignatus*, Rio Grande, p. 270, pl. x, fig. 203, n. spp., KEYSERLING, Spinnen Amerikas.

## PHILODROMIDÆ.

- Philodromus signifer*, pl. iii, fig. 20, *gracilis*, fig. 21, *unicolor*, fig. 22, *ornatus*, fig. 24, *placidus*, fig. 25 ; BANKS, P. Ac. Philad. 1892.
- P. minutus*, pl. v, fig. 85, *minusculus*, pl. ii, fig. 39, *exilis*, pl. ii, fig. 40, pp. 59–63, Cayuga Lake, BANKS, P. Ac. Philad. 1892 ; *P. meridionalis*, Rio Grande, p. 251, pl. x, fig. 190, KEYSERLING, Spinnen Amerikas : n. spp.

*Thanatus taquara*, Taquara, p. 252, pl. x, fig. 191, KEYSERLING, Spinnen Amerikas, n. sp.

## PHOLCIDÆ.

*Pholcus bicornutus*, in Caves, Luzon, p. 41, pl. ii, figg. 3 & 4, SIMON, Ann. Soc. Ent. Fr. lxi; *imbecillus*, Serra Vermella, p. 170, pl. v, fig. 115, *cæruleus*, p. 171, fig. 116, *luteus*, p. 171, fig. 117, *togatus*, p. 172, fig. 118, *cyaneo-maculatus*, p. 173, fig. 119, Brazil, *ultiventer*, Serra Vermella, p. 175, fig. 120, *cyaneo-teniatus*, Brazil, p. 176, fig. 121, KEYSERLING, Spinnen Amerikas : n. spp.

*Spermophora estebani*, in Cave, Luzon, p. 42, SIMON, Ann. Soc. Ent. Fr. lxi; *S. maculata*, Blumenau, p. 177, pl. vi, fig. 122, *unicolor*, Serra Vermella, p. 178, fig. 123, *bicornis*, Sao Paulo, p. 179, fig. 124, KEYSERLING, Spinnen Amerikas : n. spp.

*Calapnita*, n. g. for *C. vermiformis*, n. sp., in Cave, Luzon, p. 42; SIMON, Ann. Soc. Ent. Fr. lxi.

## PALPIMANIDÆ and PRODIDOMIDÆ.

*Jheringia*, n. g. *Palpimanidæ*, p. 25, for *J. lutea*, n. sp., Rio Grande, p. 26; KEYSERLING, Spinnen Amerikas.

*Storena annulipes*, Singapore, p. 209, THORELL, Bull. Soc. Ent. Ital. xxiv, n. sp.

## SCYTODIDÆ.

*Scytodes annulata*, Serra Vermella, p. 166, pl. v, fig. 113; KEYSERLING, Spinnen Amerikas, n. sp.

*Pandeus*, n. g., p. 167, for *P. cæruleus*, n. sp., Blumenau, p. 168, pl. v, fig. 114; KEYSERLING, Spinnen Amerikas.

## SPARASSIDÆ.

*Angaus rhombipes*, Sumatra, p. 67; THORELL, Ann. Mus. Genov. xxxi, n. sp.

*Dolothymus*, n. g., pp. 62 & 63, for *D. pallidus*, n. sp., Sumatra, pp. 64-67; THORELL, Ann. Mus. Genov. xxxi.

*Heteropoda boiei*, Dol., syn. *flavimana*, Simon, Sumatra, Java, pp. 15 & 16; *H. thoracica*, C. Koch, Padang, &c., pp. 24-26; THORELL, Ann. Mus. Genov. xxxi.

*H. imbecilla*, Padang, pp. 16-19, *leptoscelis*, Sumatra, pp. 19-22, *sumatransa* (with n. var. *montana*), pp. 26-31, *signata*, pp. 32-34, Sumatra, *obtusa*, Sarawak, pp. 34-37, THORELL, Ann. Mus. Genov. xxxi; H.

- umbrata*, pl. xi, fig. 11, *eluta*, fig. 12, p. 291, *subtilis*, p. 292, fig. 13, Ceylon, KARSCH, B. E. Z. xxxvi : n. spp.
- Holconia beccarii*, Sumatra, pp. 46-49, THORELL, Ann. Mus. Genov. xxxi, n. sp.
- Libania*, n. g., pp. 49-51, for *L. scabricula*, n. sp., with var. *sulcata*, Sumatra, pp. 51-56 ; *levis*, pp. 56 & 57, *annulata*, pp. 58-60, *armillata*, pp. 60-62, Sumatra, THORELL, Ann. Mus. Genov. xxxi, n. spp.
- Palystes incanus*, Sarawak, pp. 37-40, THORELL, Ann. Mus. Genov. xxxi, n. sp.
- Sarotes impudicus*, Andaman Is., p. 233, THORELL, Ann. N. H. (6) ix ; *S. ferox*, loc. ?, p. 40, THORELL, Ann. Mus. Genov. xxxvi : n. spp.
- Thelcticopis orichalcea*, Sim., Sarawak, pp. 44-46 ; THORELL, Ann. Mus. Genov. xxxvi.
- Urgulania*, n. g., p. 11, for *U. borneensis*, n. sp., Sarawak, p. 12, THORELL, Ann. Mus. Genov. xxxvi.
- Zalapina*, n. g. for *Delena plumipes*, Dol., p. 290 (referred to the family *Clubionidæ*) ; KARSCH, B. E. Z. xxxvi.

## STEPHANOPIDÆ.

- Stephanop[ol]idæ*. New family based upon *Stephanopsis*, and allied to the *Thomisidæ* and *Sparassidæ* (*Heteropodidæ*), p. 5 ; THORELL, Ann. Mus. Genov. xxxi.
- Regillus*, Cambr., remarks on, p. 6 ; *R. cinerascens*, Dol., Ajur Mantjur, pp. 6-11 ; THORELL, Ann. Mus. Genov. xxxi.

## THERAPHASIDÆ OR AVICULARIIDÆ.

- Acanthoscurria minor*, Auss., Guyana, p. 281 ; SIMON, Ann. Soc. Ent. Fr. lxi.
- A. maga*, S. America, p. 280, *musculosa*, p. 281, *insubtilis*, Bolivia, p. 282, *ferina*, Amazons, p. 282, SIMON, Ann. Soc. Ent. Fr. lxi, n. spp.
- Accola cavicola*, Grotto of San Mateo, p. 35, *cæca*, Grotto d'Antipolo, p. 35, SIMON, Ann. Soc. Ent. Fr. lxi, n. spp.
- Actinozia*, n. g. for *A. versicolor*, n. sp., California, p. 318 ; SIMON, Act. Soc. L. Bord. xlv.
- Agathostola*, n. g. for *A. strabo*, n. sp., Columbia, p. 163 ; SIMON, Hist. Nat. des Araignées.
- Apostichus*, n. g. for *A. atomarius*, p. 317, n. sp. ; SIMON, Act. Soc. L. Bord. xlv.
- A. clathratus*, p. 318, California, SIMON, Act. Soc. L. Bord. xlv, n. sp.
- Arbanitis huttonii*, Cambr., Dunedin, p. 255, pl. xix, figg. 2 & 3 ; GOYEN, Tr. N. Z. Inst. xxiv.
- Bothriocyrtum*, n. g., p. 314, for *Cteniza californica*, Cambr., Texas, California, &c., p. 315, and *B. fabrilis*, n. sp., Mexico, p. 327 ; SIMON, Act. Soc. L. Bord. xlv.

- Brachybothrium* (syn. *Nidivalvata*, Atk.) *robustum*, Virginia, &c., p. 311, SIMON, Act. Soc. L. Bord. xliv, n. sp.
- Brachythele longitarsis*, Sim., Texas, &c., p. 319; SIMON, Act. Soc. L. Bord. xliv.
- Brachypelma*, n. g. for *B. emilia*, White, Mexico, p. 338; SIMON, Act. Soc. L. Bord. xliv.
- Chilobrachys*, n. g., p. 270, for *C. nitelinus*, n. sp., Ceylon, p. 271, pl. x, fig. 2; KARSCH, B. E. Z. xxxvi.
- Cratorrhagus*, n. g. for *C. cervinus*, n. sp., Mexico, p. 330; SIMON, Act. Soc. L. Bord. xliv.
- Crypsidromus bolivianus*, Bolivia, p. 278, SIMON, Ann. Soc. Ent. Fr. lxi; *C. perfidus*, p. 14, *funestus*, p. 15, Taquara, KEYSERLING, Spinnen Amerikas : n. spp.
- Cyclocosmia theveneti*, California, p. 313, SIMON, Act. Soc. L. Bord. xliv, n. sp.
- Cyclosternum obscurum*, Mexico, p. 330, SIMON, Act. Soc. L. Bord. xliv, n. sp.
- Cyrtauenias sebra*, Zululand, p. 272, SIMON, Ann. Soc. Ent. Fr. lxi, n. sp.
- Cyrtosternum meridionale*, Taquara, p. 6, KEYSERLING, Spinnen Amerikas, n. sp.
- Diplothele halyi*, Ceylon, p. 123, SIMON, Hist. Nat. des Araignées, n. sp.
- Encyocrates*, n. g., p. 279, for *E. raffrayi*, Madagascar, p. 280; SIMON, Ann. Soc. Ent. Fr. lxi, n. sp.
- Ephebopus*, n. g. for *Mygale murinus*, Walck., p. 155; SIMON, Hist. Nat. des Araignées.
- Eudiplura*, n. g. for *Diplura rogenhoferi*, Auss., p. 179; SIMON, Hist. Nat. des Araignées.
- Eurypelma steindachneri*, Auss., Texas; *hentsi*, Gir., syn. *mordax*, Auss., Texas, &c., p. 322; *vagans*, Auss., syn. *dupontii*, Becker, Mexico, &c.; SIMON, Act. Soc. L. Bord. xliv.
- E. jheringii*, p. 19, pl. i, fig. 4, *vitiosa*, p. 21, pl. i, fig. 5, Taquara, KEYSERLING, Spinnen Amerikas; *E. rusticum*, Arizona, p. 323, *helluo*, Lower California, p. 324, *marzi*, California, &c., *lanceolatum*, Nicaragua, p. 335, *caniceps*, Mexico, p. 336, *serratum*, Mexico, *panamense*, p. 337, Panama, SIMON, Act. Soc. L. Bord. xliv; *E. guyanum*, Guyana, p. 167, SIMON, Hist. Nat. des Araignées : n. spp.
- Evagrus rubrigularis*, Idaho, p. 320, SIMON, Act. Soc. L. Bord. xliv, n. sp.
- Grammostola*, n. g. for *Eurypelma pulchripes*, Simon, Paraguay, p. 163; SIMON, Hist. Nat. des Araignées.
- Hapalopus villosus*, Taquara, p. 7, pl. i, fig. 2, KEYSERLING, Spinnen Amerikas, n. sp.
- Haplothele (Fufius) lanicia*, p. 283, *garleppi*, p. 284, Bolivia, SIMON, Ann. Soc. Ent. Fr. lxi, n. spp.
- Haplodastus*, n. g. for *H. cervinus*, n. sp., S. India, p. 152; SIMON, Hist. Nat. des Araignées.



- Haplopelma*, n. g. for *Selenocosmia doriae*, Thor., p. 151; SIMON, Hist. Nat. des Araignées.
- Heligomerus*, n. g., p. 90, for *H. taprobanicus*, Kandy, *prostans*, S. India, p. 91 (in note), SIMON, Hist. Nat. des Araignées, n. spp.
- Homœomma texense*, Texas, p. 320, SIMON, Act. Soc. L. Bord. xliv, n. sp.
- Homœoplacia*, n. g. for *H. pentodon*, Amazons, p. 275, SIMON, Ann. Soc. Ent. Fr. lxi, n. sp.
- Homostola*, n. g., p. 271, for *H. vulpecula*, Zululand, p. 271, SIMON, Ann. Soc. Ent. Fr. lxi, n. sp.
- Hysteroerates*, n. g. for *Phoneyusa greshoffi*, Simon, p. 153; SIMON, Hist. Nat. des Araignées.
- Idiops germaini*, Rio Grande, p. 92, SIMON, Hist. Nat. des Araignées, n. sp.
- Ichnocolus pilosus*, Rio Grande, p. 9, *gracilis*, Monte Verde, p. 11, *rubropilosus*, Neu Freiburg, p. 12, *jansirus*, Rio Janeiro, p. 13, KEYSERLING, Spinnen Amerikas, n. spp.
- Lampropelma*, n. g., p. 151, for *L. nigerrimum*, Ins. Sangir, p. 151, SIMON, Hist. Nat. des Araignées, n. sp.
- Macrothele segmentata*, Pinang, p. 284, SIMON, Ann. Soc. Ent. Fr. lxi, n. sp.
- Magulla*, n. g. for *M. obesa*, Theresopolis, p. 276, SIMON, Ann. Soc. Ent. Fr. lxi, n. sp.
- Myrmecioiphila atkinsoni*, Virginia, p. 316, SIMON, Act. Soc. L. Bord. xliv, n. sp.
- Nemesia arenicola*, Corsica, p. 113, *didieri*, Algeria, p. 114, SIMON, Hist. Nat. des Araignées, n. spp.
- Oecophloeus*, n. g. for *O. cinctipes*, n. sp., Ceylon, pp. 49-51, figured, with nest, pl. iia; POCKOCK, Ann. N. H. (6) ix: syn. *Sason robustum*, Cambr.; SIMON, Hist. Nat. des Araignées.
- Ornithoctonus*, n. g. for *O. andersoni*, Mergui, pp. 317 & 318, pl. xvii, figg. 1-3, POCKOCK, J. L. S. xxiv, n. sp.
- Orphnæcus*, n. g. for *O. pellitus*, Grotto de Calapnitan (Philippines), pp. 36 & 37, SIMON, Ann. Soc. Ent. Fr. lxi, n. sp.
- Pachyloscelis crassipes*, Rio Grande do Sul, p. 3, pl. i, fig. 1, *luteipes*, Rio Janeiro, p. 5, KEYSERLING, Spinnen Amerikas, n. spp.
- Paraphysa*, n. g. for *P. manicata*, S. America, p. 166, SIMON, Hist. Nat. des Araignées, n. sp.
- Phlogius cunicularius*, Pinang, p. 279, SIMON, Ann. Soc. Ent. Fr. lxi, n. sp.
- Phrissacia*, n. g. for *P. ecuadorensis*, Ecuador, p. 274, SIMON, Ann. Soc. Ent. Fr. lxi, n. sp.
- Plagiobothrus*, n. g., p. 272, for *P. semilunaris*, Peradenia, p. 278, pl. x, fig. 3, KARSCH, B. E. Z. xxxvi, n. sp.
- Planadecta*, n. g. for *P. lyrata*, S. America, p. 168, SIMON, Hist. Nat. des Araignées, n. sp.
- Porrhothele*, n. g. for *Mygale antipodiana*, Walck., p. 185; SIMON, Hist. Nat. des Araignées.
- Pselligmus*, n. g. for *P. infaustus*, Abrolhos, p. 273, SIMON, Ann. Soc. Ent. Fr. lxi, n. sp.

- Ruchias*, n. g. for *Hermacha dispar*, Sim., p. 114 ; SIMON, Hist. Nat. des Araignées.
- Rhechosica*, n. g. for *Homasonma texense*, Simon, p. 162 ; SIMON, Hist. Nat. des Araignées.
- Scalidognathus*, n. g., p. 269, for *S. seticeps*, Peradenia, p. 270, pl. x, fig. 1, KARSCH, B. E. Z. xxxvi, n. sp.
- Sootinæus*, n. g. for *Hexathele cinereo-pilosa*, Sim. ; SIMON, Hist. Nat. des Araignées.
- Sipalolasma*, n. g., p. 123, for *S. ellioti*, Ceylon, p. 124 ; SIMON, Hist. Nat. des Araignées, n. sp.
- Stasinopus*, n. g., p. 81, for *Actinopus caffrus*, C. Koch, p. 81 ; SIMON, Hist. Nat. des Araignées.
- Stenyrocercus*, n. g. for *Macrothele silvicola*, Sim., p. 185 ; SIMON, Hist. Nat. des Araignées.
- Sterrhochrotus*, n. g. for *Cteniza farghanensis*, Cron., p. 97 ; SIMON, Hist. Nat. des Araignées.
- Stichoplastus fabrei*, India, p. 278, SIMON, Ann. Soc. Ent. Fr. lxi, n. sp.
- Tupinauchenius cœrulescens*, Indian Terr., p. 325, *texense*, Texas, p. 326, SIMON, Act. Soc. L. Bord. xlv, n. spp.
- Thelecoris*, Karsch (syn. *Entomothele*, Simon), *sebrina*, Polvon [Nicaragua], p. 329, SIMON, Act. Soc. L. Bord. xlv, n. sp.
- Tigidia*, n. g. for *T. mauriciana*, Mauritius, p. 274, SIMON, Ann. Soc. Ent. Fr. lxi, n. sp.
- Tmesiphantes*, n. g., for *T. nubilus*, Bahia, p. 277, SIMON, Ann. Soc. Ent. Fr. lxi, n. sp.
- Trechona auronitens*, p. 16, pl. i, fig. 3, *pantherina*, p. 18, Taquara, KEYSERLING, Spinnen Amerikas, n. spp.
- Xenesthis*, n. g., p. 332, for *X. columbiana*, Panama, p. 333, SIMON, Act. Soc. L. Bord. xlv, n. sp.

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- Achea maxima*, Rio Grande, p. 198, pl. vii, fig. 142, *signata*, Neu Freiburg, p. 199, fig. 143, *pulchra*, Rio Janeiro, p. 200, fig. 144, KEYSERLING, Spinnen Amerikas, n. spp.
- Ariannes longissimus*, Neu Freiburg, &c., p. 202, pl. vii, fig. 145, KEYSERLING, Spinnen Amerikas ; *A. simulans*, Calcutta, p. 417, pl. xxii, CAMBRIDGE, Ann. N. H. (6) x : n. spp.
- Argyrodes fuscatus*, Singapore, p. 212, THORELL, Bull. Soc. Ent. Ital. xxiv ; *A. acuminatus*, Serra Vermella, &c., p. 207, pl. vii, fig. 149, *longicaudatus*, Serra Vermella, p. 209, fig. 150, *alticeps*, Espirito Santo, p. 210, fig. 151, *altus*, Espirito Santo, p. 211, fig. 152, *ululabilis*, Taquara, p. 212, fig. 153, *striatus*, Espirito Santo, p. 213, fig. 154, KEYSERLING, Spinnen Amerikas, n. spp.
- Bathyphantes parvulus*, Westr., and *gracilis*, Blk., England, pp. 392 & 393, pl. xxi, figg. 6 & 7 ; F. CAMBRIDGE, Ann. N. H. (6) x.

- B. decorata*, p. 44, pl. ii, fig. 41, *argenteo-maculata*, *pallida*, pl. v, fig. 42, *unimaculata*, pl. ii, fig. 65, p. 45, *inornata*, pl. v, fig. 66, *tristis*, pl. ii, fig. 45, p. 46, Cayuga Lake, BANKS, P. Ac. Philad. 1892, n. spp.
- Ceratinella minuta*, Em., pl. ii, fig. 60, & pl. iv, fig. 60, *bulbosa*, Em., p. 32, pl. v, fig. 59, *pygmaea*, Em., p. 32, pl. ii, fig. 57; BANKS, P. Ac. Philad. 1892.
- C. similis*, p. 31, pl. v, fig. 61, *mæsta*, p. 32, pl. ii, fig. 58, & pl. v, fig. 58, *placida*, p. 32, pl. ii, fig. 54, *formosa*, p. 33, pl. ii, fig. 55, *annulipes*, p. 33, pl. ii, fig. 56, Cayuga Lake, BANKS, P. Ac. Philad. 1892, n. spp.
- Ceratinopsis frontatus*, Cayuga Lake, p. 33, pl. v, fig. 63, BANKS, P. Ac. Philad. 1892, n. sp.
- Chryseo nigrosternum*, Taquara, p. 206, pl. vii, fig. 148, KEYSERLING, Spinnen Amerikas, n. sp.
- Cornicularia formosa*, p. 34, pl. v, fig. 35, *placida*, p. 35, fig. 36, Cayuga Lake, BANKS, P. Ac. Philad. 1892, n. spp.
- Diplostyla pallida*, pl. ii, fig. 29, *alboventris*, pl. v, fig. 31, p. 43, Cayuga Lake, BANKS, P. Ac. Philad. 1892, n. spp.
- Dipæna teniatipes*, Rio Grande, p. 224, pl. viii, fig. 165, *maculata*, Espirito Santo, p. 225, fig. 166, *obscura*, Serra Vermella, p. 226, fig. 167, KEYSERLING, Spinnen Amerikas, n. spp.
- Erigone rusticella*, Rio Grande, p. 238, pl. ix, fig. 180a, *nitida*, Rio Grande, p. 239, fig. 181a, *fucosa*, p. 240, fig. 182a, *rusticula*, p. 240, fig. 183, *vegeta*, p. 241, fig. 184, Rio Grande, KEYSERLING, Spinnen Amerikas, n. spp.
- Ero goldii*, Serra Vermella, p. 218, pl. viii, fig. 159, *gracilis*, Neu Freiburg, p. 219, fig. 160, *valida*, St. Antonio, p. 220, fig. 161, *lata*, Neu Freiburg, p. 220, fig. 162, KEYSERLING, Spinnen Amerikas, n. spp.
- Euryopsis lutea*, Serra Vermella, p. 227, pl. ix, fig. 168, *maculata*, Miracena, p. 227, fig. 169, KEYSERLING, Spinnen Amerikas, n. spp.
- Frontina turbidula*, Espirito Santo, p. 228, pl. ix, fig. 170, *armata*, Serra Vermella, p. 230, fig. 171, *obscura*, Espirito Santo, p. 231, fig. 172, *cylindrata*, Sao Paulo, p. 232, fig. 173, *elegans*, Rio Negro, p. 233, fig. 174, *clava*, Serra Vermella, p. 234, fig. 175, *longiceps*, Serra Vermella, p. 234, fig. 176, *decorata*, Neu Freiburg, p. 235, fig. 177, *rubriceps*, Rio Grande, p. 236, fig. 178, KEYSERLING, Spinnen Amerikas, n. spp.
- Grammonota venusta*, Cayuga Lake, p. 34, pl. v, fig. 64, BANKS, P. Ac. Philad. 1892, n. sp.
- Helvibis longicauda*, Espirito Santo, p. 204, pl. vii, fig. 146, *monticola*, Serra Vermella, p. 205, fig. 147, KEYSERLING, Spinnen Amerikas, n. spp.
- Heribertus flavomaculatus*, Serra Vermella, p. 223, pl. ix, fig. 164, KEYSERLING, Spinnen Amerikas, n. sp.
- Leptyphantes ericæus*, Blk., England, p. 390, pl. xx, fig. 4; F. CAMBRIDGE, Ann. N. H. (6) x.

- L. plumiger*, Dorset, p. 386, pl. xx, fig. 2, F. CAMBRIDGE, Ann. N. H. (6) x, n. sp.
- Linyphia conferta*, Hentz, pl. ii, fig. 38, p. 42, Cayuga Lake; BANKS, P. Ac. Philad. 1892.
- L. variabilis*, pl. ii, fig. 28, Cayuga Lake, BANKS, P. Ac. Philad. 1892, n. sp.
- Lophocarenum castaneum*, Em., p. 35, pl. iv, fig. 3; BANKS, P. Ac. Philad. 1892.
- L. triste*, p. 35, pl. iv, fig. 1, *unimaculatum*, p. 35, fig. 2, *miniatum*, fig. 4, *venustum*, fig. 5, *parvum*, fig. 6, *exiguum*, fig. 7, p. 36, *crenatoideum*, fig. 8, *formosum*, fig. 10, *arvense*, fig. 11, p. 37, *longius*, p. 38, fig. 12, Cayuga Lake; BANKS, P. Ac. Philad. 1892, n. spp.
- Microneta latens*, pl. v, fig. 46, p. 46, *palustris*, pl. ii, fig. 47, *luteola*, pl. ii, fig. 48, *flaveola*, pl. v, fig. 42, *complicata*, pl. ii, fig. 50, p. 47, *minutissima*, pl. ii, fig. 27, *frontata*, pl. v, fig. 51, *gigantea*, pl. ii, fig. 52, *distincta*, pl. ii, fig. 53, p. 48, Cayuga Lake, BANKS, P. Ac. Philad. 1892, n. spp.
- Milone*, n. g., p. 215, for *M. triacantha*, n. sp., Singapore, p. 216; THORELL, Bull. Soc. Ent. Ital. xxiv.
- Mimetes atri-cinctus*, Stratford (N. Z.), p. 234, URQUHART, Tr. N. Z. Inst. xxiv, n. sp.
- Theridium weberi*, Singapore, p. 219, THORELL, Bull. Soc. Ent. Ital. xxiv; *T. bellulum*, Neu Freiburg, p. 180, pl. vi, fig. 125, *unanimum*, Neu Freiburg, p. 181, fig. 126, *quadripartitum*, Sao Paulo, p. 182, fig. 127, *subrotundum*, Serra Vermella, p. 183, fig. 128, *bentificum*, Rio Grande, p. 184, fig. 129, *tinctorium*, Rio Grande, p. 185, fig. 130, *querulum*, p. 186, fig. 131, *obnubilum*, Serra Vermella, p. 187, fig. 132, *dubiosum*, Neu Freiburg, p. 187, fig. 133, *nigriceps*, Sao Paulo, p. 188, fig. 134, *notabile*, Serra Vermella, p. 189, fig. 135, *triguttatum*, Neu Freiburg, p. 190, fig. 136, *rotundum*, Neu Freiburg, p. 191, fig. 137, *pallipes*, Serra Vermella, p. 191, fig. 138, *vividum*, Espirito Santo, p. 192, fig. 139, *bicorne*, Serra Vermella, p. 193, fig. 140, *passivum*, Fazenda Calvario, p. 195, fig. 141, KEYSERLING, Spinnen Amerikas; *T. argentatum*, Hawera, p. 235, *albo-cinctum*, p. 236, *ampliatum*, p. 237, Stratford, URQUHART, Tr. N. Z. Inst. xxiv : n. spp.
- Tmeticus unicorn*, *obscurus*, *flaveolus*, *luzuosus*, *rusticus*, *humilis*, *mæstus*, *debilis*, *palustris*, *distinctus*, *maculatus*, *minutus*, pl. iv, figg. 13-24, pp. 38-41, *gnavus*, p. 41, pl. v, fig. 44, Cayuga Lake, BANKS, P. Ac. Philad. 1892; *T. simplex*, Cannock, p. 384, pl. xx, fig. 5, F. CAMBRIDGE, Ann. N. H. (6) x : n. spp.
- Totua*, n. g. for *T. gracilipes*, Rio Grande, p. 216, pl. viii, fig. 158; KEYSERLING, Spinnen Amerikas, n. sp.
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- Camarius formosus*, Thor., figured on pl. iv, by WORKMAN, Malaysian Spiders.
- Diaa zonura*, Sumatra, pp. 95-98, THORELL, Ann. Mus. Genov. xxxi, n. sp.
- Daradius javanus*, Java, pp. 78-82, *perspicillatus*, Sarawak, pp. 82-86, THORELL, Ann. Mus. Genov. xxxi, n. spp.
- Hedana perspicax*, Sumatra, pp. 106-109, *ocellata*, Java, pp. 109-113, THORELL, Ann. Mus. Genov. xxxi, n. spp.
- Microcylus*, n. g., p. 118, for *M. elegans*, Sumatra, pp. 119-121, *nanus*, Java, pp. 121 & 122, THORELL, Ann. Mus. Genov. xxxi, n. spp.
- Misumena foliata*, p. 57, pl. iii, fig. 17, & pl. ii, fig. 37, *placida*, p. 58, Cayuga Lake, BANKS, P. Ac. Philad. 1892; *M. dierythra*, Singapore, p. 92, THORELL, Ann. Mus. Genov. xxxi; *M. maculis-sparsa*, Taquara, p. 246, pl. x, fig. 186, KEYSERLING, Spinnen Amerikas; *M. clarkii*, Madeira, p. 219, pl. xiv, figg. 7 & 8, WARBURTON, Ann. N. H. (6) x : n. spp.
- Musæus*, n. g., pp. 71 & 72, for *M. politus*, n. sp., Sumatra, pp. 72-75; THORELL, Ann. Mus. Genov. xxxi.
- Narcæus*, n. g., p. 79, for *N. picinus*, n. sp., Java, pp. 100-102; THORELL, Ann. Mus. Genov. xxxi.
- Palephatus pseudorcheates*, Sumatra, p. 127, THORELL, Ann. Mus. Genov. xxxi, n. sp.
- Peltorhynchus*, n. g., pp. 113 & 114, for *P. rostratus*, n. sp., Java, pp. 114-117, THORELL, Ann. Mus. Genov. xxxi; also figured, pl. iii, by WORKMAN, Malaysian Spiders.
- Runcinia knbergii*, pp. 86-89, *disticta*, pp. 89-91, Java, THORELL, Ann. Mus. Genov. xxxi, n. spp.
- Synema luteovittata*, Rio Grande, p. 247, pl. x, fig. 187, KEYSERLING, Spinnen Amerikas, n. sp.
- Tharpyna varica*, Java, p. 102, THORELL, Ann. Mus. Genov. xxxi, n. sp.
- Tmarus eques*, Java, pp. 75-78, THORELL, Ann. Mus. Genov. xxxi; *T. variatus*, pl. x, fig. 188, *clavipes*, p. 280, fig. 189, Taquara, KEYSERLING, Spinnen Amerikas : n. spp.
- Xysticus distinctus*, pl. iii, fig. 89, *brunneus*, pl. iii, fig. 4, *crudelis*, fig. 5, *transversus*, fig. 6, *lentus*, pl. ii, fig. 67, *nervosus*, pl. iii, fig. 8, & pl. iv, fig. 84, *formosus*, pl. iii, fig. 9, pp. 52-56, Cayuga Lake, BANKS, P. Ac. Philad. 1892, n. spp.
- Zamelopias*, n. g., pp. 122 & 123, for *Z. speculator*, Sumatra, pp. 123-126; THORELL, Ann. Mus. Genov. xxxi, n. sp.

## ULOBORIDÆ.

- Æbutina*, n. g. for *Æ. binotata*, n. sp., Brazil, p. 222, SIMON, Hist. Nat. des Araignées. According to SIMON, *i. c.*, this genus is the sole representative of the subfamily *Æbutinina* of the family *Uloboridae*.

- Hyptiotes analis*, n. sp., Kandy, p. 219, SIMON, Hist. Nat. des Araignées.  
According to SIMON, *t. c.*, this genus constitutes, with *Miagrammopes*,  
the subfamily *Miagrammopinae* of the family *Uloboridae*.  
*Uloborus quadri-tuberculatus*, Singapore, p. 221, THORELL, Bull. Soc. Ent.  
Ital. xxiv, n. sp.

## ZODARIIDÆ and ZOROPSIDÆ.

- Habronestes* (*Zodariidæ*) *major*, p. 158, pl. iv, fig. 109, *minor*, p. 159,  
fig. 110, Blumenau, KEYSERLING, Spinnen Amerikas, n. spp.  
*Racius*, n. g. of *Zoropsidæ*, for *Amaurobius crassipes*, L. Koch, p. 230,  
SIMON, Hist. Nat. des Araignées.

## (D.) PSEUDOSCORPIONES.

- BALZAN, Ann. Soc. Ent. Fr. lx, divides this group into two suborders :  
the *Panctenodactyli*, containing the *Cheliferidæ*, and the *Hemicteno-*  
*dactyli*, for the *Obisiidæ* and *Pseudobisiidæ*.

## CHELIFERIDÆ.

- Atemnus nidificator*, n. var. *minor*, San Esteban, p. 510, *pallidus*, Sierra  
Leone, p. 511, pl. ix, fig. 2, *subrobustus*, Caraccas, p. 512, fig. 3,  
BALZAN, Ann. Soc. Ent. Fr. lx, n. spp.  
*Chernes insuetus*, Dover, p. 225, pl. c, fig. 17, *dubius*, Sherborne, p. 227,  
fig. 19, CAMBRIDGE, P. Dorset Field Club, xiii, n. spp.  
*Lamprochernes macrochelatus*, Töm., and *argentinus*, Thor., Venezuela,  
pp. 513 & 516, pl. ix, figg. 4 & 7 ; BALZAN, Ann. Soc. Ent. Fr. lx.  
*L. octentoctus*, S. Africa, p. 514, fig. 5, *intermedius*, Venezuela, p. 515,  
fig. 6, *similis*, Manaos, p. 517, fig. 8, *venezuelanus*, San Esteban, p. 518,  
fig. 9, *ovatus*, Caraccas, fig. 10, *thorelli*, Sumatra, pl. x, fig. 11, p. 519,  
*elegans*, Venezuela, p. 520, fig. 12, BALZAN, Ann. Soc. Ent. Fr. lx, n. spp.  
*Trachychernes subrudis*, Venezuela, p. 521, pl. x, fig. 13, *subrotundatus*,  
Venezuela, p. 522, fig. 14, *floridæ*, Florida, p. 524, fig. 15, *bicolor*,  
Venezuela, p. 524, Caraccas, fig. 16, *albomaculatus*, Venezuela, p. 526,  
fig. 17, *armiger*, Pebas, p. 527, fig. 18, BALZAN, Ann. Soc. Ent. Fr. lx,  
n. spp.  
*Chelifer canestrinii*, Balz., p. 532, fig. 22, *meridianus*, L. Koch, fig. 23,  
*longichelifer*, Balz., Venezuela, p. 534, fig. 26, *rufus*, Balz., fig. 25 ;  
BALZAN, Ann. Soc. Ent. Fr. lx.  
*C. pekinensis*, Pekin, p. 528, pl. xi, fig. 19, *simoni*, Sierra Leone, p. 529,  
fig. 20, *tenuimanus*, Nossi-bé, p. 531, fig. 21, *degeneratus*, S. California,  
p. 532, fig. 24, BALZAN, Ann. Soc. Ent. Fr. lx, n. spp.  
*Garypus senegalensis*, Senegal, p. 535, pl. xii, fig. 27, BALZAN, Ann. Soc.  
Ent. Fr. lx, n. sp.  
*Olpium crassichelatum*, Balz., fig. 29, Venezuela ; BALZAN, Ann. Soc. Ent.  
Fr. lx.  
*O. cordinanum*, Venezuela, p. 536, pl. xii, fig. 28, *furculiferum*, Vene-  
zuela, p. 537, fig. 30, BALZAN, Ann. Soc. Ent. Fr. lx, n. spp.  
1892. [VOL. XXIX.] D 12

## PSEUDOBISIIDÆ.

N. fam., p. 539 ; BALZAN, Ann. Soc. Ent. Fr. lx.

## PSEUDOBISIINÆ.

N. subfam., p. 539 ; BALZAN, Ann. Soc. Ent. Fr. lx.

*Ideobisium*, n. g., p. 539, (*Ideoroncus*) *gracilis*, n. sp., Venezuela, p. 540, pl. xii, fig. 31 ; BALZAN, Ann. Soc. Ent. Fr. lx.

*Ideoblothrus*, n. subg. of *Ideobisium*, p. 541, for *I. similis*, n. sp., Venezuela, p. 541, pl. xii, fig. 32 ; BALZAN, Ann. Soc. Ent. Fr. lx.

*Ideobisium crassimanum*, n. sp., Venezuela, p. 542, pl. xii, fig. 33, BALZAN, Ann. Soc. Ent. Fr. lx.

## MICROCREAGRINÆ.

N. subfam. ; BALZAN, Ann. Soc. Ent. Fr. lx, p. 543.

*Microcreagris*, n. g., p. 543, for *M. gigas*, n. sp., China, p. 544, pl. xii, fig. 34 ; BALZAN, Ann. Soc. Ent. Fr. lx.

## OBISIIDÆ.

## CHTHONIINÆ.

N. subfam., p. 545 ; BALZAN, Ann. Soc. Ent. Fr. lx.

*Chthonius parvidentatus*, Balz., p. 547, fig. 36 ; BALZAN, Ann. Soc. Ent. Fr. lx.

*C. (Pseudochthonius*, n. subg.) *simoni*, Caraccas, p. 546, pl. xii, fig. 35, BALZAN, Ann. Soc. Ent. Fr. lx, n. sp.

## (E.) OPILIONES.

*Caddo*, n. g., for *C. agilis*, n. sp., Long I., p. 280 ; BANKS, P. E. Soc. Wash. ii.

*Gagrella ceylonensis*, p. 308, *bispinosa*, Passelawa, p. 309, KARSCH, B. E. Z. xxxvi, n. spp.

*Liobunum vittatum*, Say, pp. 999-1008, pla. xxvii & xxviii ; WEED, Am. Nat. xxvi.

*Phalangium cinereum*, Wood, pp. 32-36, pl. i, figg. 1 & 2 ; WEED, Am. Nat. xxvi.

*Pseudarthromerus*, n. g., p. 308, for *P. spurius*, n. sp., Nalanda (Ceylon), p. 308 ; KARSCH, B. E. Z. xxxvi.

*Zalmoxis sorenseni*, in caves, Luzon, p. 44, SIMON, Ann. Soc. Ent. Fr. lxi, n. sp.

*Cryptostemma*, Guér., notes on, with fig. ; the genus referred to the order *Meridogastra* of Thorell ; KARSCH, B. E. Z. xxxvii, pp. 25-32 & 64.

## (F.) ACARI.

## BDELLIDÆ.

*Bdella lignicola*, G. Can., pt. lxii, No. 7; BERLESE, Acari in Italia reperta.  
*Linopodes*, pt. lxi, No. 1, *motatorius*, L., Italy, No. 2, BERLESE, Acari in Italia reperta.

*Norneria*, pt. lxi, No. 6, *gigas*, R. Can., No. 7; BERLESE, Acari in Italia reperta.

*Notophallus longipilis*, R. Can., pt. lxi, No. 4, *minor*, R. Can., No. 5, Italy; BERLESE, Acari in Italia reperta.

*Pronematus bonatii*, Can., Italy, pt. lxi, No. 3; BERLESE, Acari in Italia reperta.

## EUPODIDÆ.

*Scyphius maniacus*, Guatemala, p. 17, pl. vi, fig. 2, STOLL, Acari in Biol. Centr.-Amer., n. sp.

## GAMASIDÆ.

*Antennophorus*, characterized, pt. lxx, No. 1; BERLESE, Acari in Italia reperta.

*Celano*, characterized, pt. lxix, No. 3; BERLESE, Acari in Italia reperta.  
*Celanopsis uropodoides*, British Honduras, p. 35, pl. xvi, fig. 4, & pl. xix, fig. 3, *megisthanoides*, Panama, p. 36, pl. xix, fig. 4, & pl. xx, fig. 1, STOLL, Acari in Biol. Centr.-Amer., n. spp.

*Cyrtolaelaps*, pt. lxiv, No. 3, *falciger*, Can., pt. lxiii, No. 4, *namorensis*, Koch, No. 5, n. var. *placida*, No. 6, *captator*, n. sp., pt. lxviii, No. 8, *spiricornis*, Can., pt. lxviii, No. 9, *cervus*, Kram., No. 10; BERLESE, Acari in Italia reperta.

*Dinychus*, characterized, pt. lxx, No. 9; BERLESE, Acari in Italia reperta.

*Epicrius*, characterized, Can. & Fanz., pt. lxix, No. 10; BERLESE, Acari in Italia reperta.

*Gamasus*, pt. lxviii, No. 1, *dentipes*, Koch, No. 2, *cornutus*, Can., No. 3, *furoatus*, Can., No. 4, *crassus*, Kram., pt. lxix, No. 6, *coleoptratorum*, L., No. 7, *rubescens*, Can., No. 9, *attenuatus*, Koch, pt. lxiii, No. 7, n. var. *minor*, No. 8; BERLESE, Acari in Italia reperta.

*G. pusillus*, pt. lxix, No. 8; BERLESE, Acari in Italia reperta, n. sp.

*Hydrogamasus*, n. g., pt. lxviii, No. 5, for *H. litoralis*, Can., No. 6; BERLESE, Acari in Italia reperta.

*Iphidosoma*, n. g., pt. lxx, No. 11, for *finetarium*, Can., *ovatum*, n. sp., pt. lxix, No. 5; BERLESE, Acari in Italia reperta.

*Laelaps (Iphis) aculeifer*, Can., and n. var. *longior*, No. 10, *ostrinus*, Koch, pt. lxvi, No. 4, *halleri*, Can., pt. lxvii, No. 6, *bombicolens*, No. 8, *lignicola*, Can., pt. xx, No. 2, *krameri*, Can., No. 4; *L. (s.s.) holostaspoides*, Can., pt. lxx, No. 13, *uncinatus*, Can., No. 15, Italy; BERLESE, Acari in Italia reperta.



- L. (Iphis) miles*, pt. lxiii, No. 9, *semiscissus*, No. 7, Italy, BERLESE, Acari in Italia reperta ; *L. (s.s.) complanatus*, p. 383, in nest of *Formica fusca*, MONIEZ, Rev. Biol. iv ; *L. (s.s.) canestrini*, pt. lxix, No. 1, *myrmecophilus*, No. 2, Italy, BERLESE, Acari in Italia reperta : n. spp.
- Leiognathus lacertinus*, pt. lxx, No. 3, BERLESE, Acari in Italia reperta, n. sp.
- Megisthanus armiger*, Berlese, Mexico, p. 34, pl. xix, fig. 1 ; STOLL, Acari in Biol. Centr.-Amer.
- M. gigantodes*, Guatemala, p. 31, pl. xviii, figg. 1 & 2, STOLL, Acari in Biol. Centr.-Amer., n. sp.
- Neoberlesia*, n. g. for *N. equitans*, n. sp., pl. lxii, No. 5 ; BERLESE, Acari in Italia reperta.
- Ophionyssus natricis*, Gerv., pt. lxx, No. 12 ; BERLESE, Acari in Italia reperta.
- Podocinum*, characterized, pt. lxx, No. 10 ; BERLESE, Acari in Italia reperta.
- Pachylaelaps strigifer*, Berl., pt. lxiv, No. 4, n. var. *siculus*, No. 5, *pectinifer*, Can., No. 6, n. var. *siculus*, pt. lxv, No. 10, BERLESE, Acari in Italia reperta ; *P. heros*, n. var. *mexicanus*, Mexico, p. 37, pl. xix, fig. 2, STOLL, Acari in Biol. Centr.-Amer.
- Pacilochirus*, pt. lxx, No. 11, *fucorum*, De Geer, *emarginatus*, Koch, and *spinipes*, Koch, pt. lxix, No. 4 ; BERLESE, Acari in Italia reperta.
- Polyaspis*, characterized, pt. lxx, No. 8 ; BERLESE, Acari in Italia reperta.
- Seiodes*, pt. lxx, No. 7, *lustricinus*, pt. lxx, No. 5, BERLESE, Acari in Italia reperta, n. sp.
- Stylorhinus rovennensis*, Can., pt. lxx, No. 13 ; BERLESE, Acari in Italia reperta.
- Uropoda spatulifera*, n. sp., with *Formica rufa*, p. 383, MONIEZ, Rev. Biol. iv ; *U. lagena*, n. sp., *tridentina*, Can., pt. lxx, No. 14, BERLESE, Acari in Italia reperta.
- U. echinata*, p. 28, pl. xvi, fig. 2, *inequipunctata*, p. 29, pl. xvi, fig. 3, *discus*, p. 29, pl. xvii, fig. 4, Guatemala, *centro-americana*, Nicaragua, p. 30, pl. xvii, fig. 1, *piriformis*, Mexico, p. 31, fig. 3, STOLL, Acari in Biol. Centr.-Amer., n. spp.
- Zercon acanthurus*, Can., pt. lxx, No. 6 ; BERLESE, Acari in Italia reperta.

## HYDRACHNIDÆ.

- Arrhenurus decurtator*, p. 520, MONIEZ, Rev. Biol. iv, n. sp.
- Feltia*, n. g., p. 323, for *F. minuta*, n. sp., Rhœtia, p. 323 ; KœNIKE, Zool. Anz. xv.
- Weltina*, n. g. for *W. micropticus*, n. sp., p. 410 ; PIERSIG, Zool. Anz. xv.
- Zachokkea*, n. g., p. 320, for *Z. oblonga*, n. sp., Rhœtia, p. 32 ; KœNIKE, Zool. Anz. xv.

## IXODIIDÆ.

The Ticks of this group are considered by MARX, P. E. Soc. Wash. ii, pp. 271-287, to rank as a suborder of *Acari*, for which the name *Cynorhæstea* is proposed. This suborder is divided into two sections :

*Catastomatu* for the *Eschatocephalidæ* and *Argusidæ*, and *Antistomatu* for the *Hæmalastoridæ*, *Izodidæ*, and *Rhipistomidæ*. These families, and all the genera they contain, are characterized.

*Amblyomma mixtum*, C. Koch, Mexico, &c., p. 19, pl. xii, figg. 1 & 2 ; STOLL, Acari in Biol. Centr.-Amer.

*A. foreli*, Guatemala, p. 21, pl. xii, fig. 3, & pl. xiv, fig. 3, *crassipunctatum*, Nicaragua, p. 22, pl. xiv, fig. 1, *sabaneræ*, Guatemala, p. 23, pl. xiv, fig. 2, STOLL, Acari in Biol. Centr.-Amer., n. spp.

*Boophilus*, n. g. for *B. bovis*, Riley ; CURTICE, J. Comp. Med. Vet. Arch. 1891.

*Ixodes vespertilionis*, Koch, pt. lxi, No. 9, *hexagonus*, Leach, No. 10, Italy ; BERLESE, Acari in Italia reperta.

*I. varani*, Natal, pp. 10-14, LEWIS, J. Quek. Club, v ; *I. boarum*, Guatemala, p. 18, pl. xiii, fig. 1, & pl. xiv, fig. 4, STOLL, Acari in Biol. Centr.-Amer., n. spp.

#### NICOLETIELLIDÆ.

*Nicoletiella neotropica*, Guatemala, p. 27, pl. xvi, fig. 1, STOLL, Acari in Biol. Centr.-Amer., n. sp.

#### ORIBATIDÆ.

*Belba*, pt. lxiii, No. 3, *pectinata*, Mich., pt. xli, No. 8 ; BERLESE, Acari in Italia reperta.

*Discopoma*, Can., pt. lxviii, No. 7 ; BERLESE, Acari in Italia reperta.

*Hermannia*, pt. lxvii, No. 10, *nana*, Nic., pt. lxiii, No. 1 ; BERLESE, Acari in Italia reperta.

*Hoplophora*, Koch, pt. lxvii, No. 5, *magna*, Nic., pt. lxvii, No. 9 ; BERLESE, Acari in Italia reperta.

*H. retalteca*, Guatemala, p. 27, pl. xv, fig. 4, STOLL, Acari in Biol. Centr.-Amer., n. sp.

*Oppia tibialis*, Nic., pt. lxiv, No. 1, n. var. *sicula* ; *ucorum*, Koch, No. 2 ; BERLESE, Acari in Italia reperta.

*Oribates mucronatus*, Can., pt. lxii, No. 8 ; BERLESE, Acari in Italia reperta.

*O. centro-americanæ*, Panama, Honduras, p. 24, pl. xv, fig. 1, *nigrifrons*, Belize and Guatemala, p. 25, pl. xv, fig. 2, STOLL, Acari in Biol. Centr.-Amer., n. spp.

*Zetorchestes*, pt. lxiii, No. 2 ; BERLESE, Acari in Italia reperta.

#### PHYTOPTIDÆ.

*Anthocoptes*, n. g. for *P. loricatus*, *galeatus*, *heteroproctus*, &c., p. 16 ; NALEPA, SB. Ac. Wien, 1892.

*A. platynotus*, p. 191, NALEPA, SB. Ak. Wien, 1892, n. sp.

*Cecidophyes syriacus*, p. 158, FOCKEY, Rev. Biol. iv ; *C. minor*, p. 16, *gemmarum*, p. 128 ; NALEPA, SB. Ak. Wien, 1892 : n. spp.

- Monaulax*, n. g., p. 191, for *M. sulcatus*, n. sp., p. 192; NALEPA, SB. Ak. Wien, 1892.
- Oxypleurites*, n. subg. of *Tegonotus*, for *O. (T.) trouessarti*, p. 330, pl. xiii, figg. 3 & 4, *serratus*, p. 333, pl. xiii, figg. 7-9, n. spp., and *heptacanthus*, Nal., p. 335, pl. xiii, figg. 10-12; NALEPA, Zool. Jahrb. vi.
- Phyllocoptes magnirostris*, *parvus*, p. 128, *populinus*, p. 16, *gracilipes*, *compressus*, *gigantorhynchus*, *comatus*, p. 191, NALEPA, SB. Ak. Wien, 1892, n. spp.
- Phyllocoptes longifilis*, p. 380, *cytisicola*, p. 6, CANESTRINI, Atti Soc. Ven.-Trent. xii; *rostratus*, Syria, p. 232, fig., FOCKEU, Rev. Biol. iv : n. spp.
- Phytoptus vitalbæ*, p. 79, *breviceps*, p. 80, CANESTRINI, Bull. Soc. Ven.-Trent. v; *P. xylostei*, p. 377, *peucedani*, p. 378, *sanguisorbæ*, p. 379, CANESTRINI, Atti Soc. Ven.-Trent. xii; *P. lycii*, p. 837, *carueli*, p. 838, *effusus*, p. 838, CANESTRINI, Atti Ist. Venet. i; *P. eryugii*, p. 5, CANESTRINI, op. cit. li; *P. curvatus*, p. 152, fig., *barroisi*, p. 154, fig., *ephedra*, p. 155, fig., *orientalis*, p. 156, fig., *fusiformis*, p. 231, fig., Syria, FOCKEU, Rev. Biol. iv; *P. eucricotes*, *triradiatus*, p. 128, NALEPA, SB. Ak. Wien, 1892; *P. pilosellus*, *tenellus*, *glaber*, *gibbosus*, *alpestris*, pp. 190 & 191, NALEPA, t. c.; *P. cladophthirus*, p. 16, NALEPA, SB. Ak. Wien, 1892 : n. spp.
- P. tilia*, n. var. *liosoma*, p. 16; NALEPA, SB. Ak. Wien, 1892.
- Tegonotus*, n. gen., pp. 327-329, for *T. carinatus*, n. sp., p. 329, pl. xiii, figg. 1 & 2; NALEPA, Zool. Jahrb. vi.
- T. fastigatus*, p. 332, pl. xiii, figg. 5-7, NALEPA, Zool. Jahrb. vi; *T. salicobius*, p. 128, NALEPA, SB. Ak. Wien, 1892 : n. spp.
- Trimerus trinotus*, p. 191, NALEPA, SB. Ak. Wien, 1892, n. sp.

## SARCOPTIDÆ.

- Canestrinia procrusti*, Berl., pt. lxxv, No. 9; BERLESE, Acari in Italia reperta.
- Chorioptes* or *Symbiotes*, question of identity; BUYSSON, Bull. Soc. Ent. Fr. 1891, p. clx.
- Megninia oscinum*, Koch, pt. xlv, No. 3; BERLESE, Acari in Italia reperta.
- M. peroglossorum*, Guatemala, p. 40, pl. xxi, fig. 5, STOLL, Acari in Biol. Centr.-Amer., n. sp.
- Proctophyllodes glandarius*, Koch, pt. lxxv, No. 7; BERLESE, Acari in Italia reperta.
- P. sialiarum*, Guatemala, p. 42, pl. xvi, figg. 3 & 4, STOLL, Acari in Biol. Centr.-Amer., n. sp.
- Pterocolus bifurcatus*, Trouess., pt. lxxv, No. 8; BERLESE, Acari in Italia reperta.
- Pterolichus securiger*, Rob., pt. lxxv, No. 4, *proctogamus*, No. 5, *rhebergi*, Can. & Berl., No. 6; BERLESE, Acari in Italia reperta.

- P. momotorum*, Guatemala, p. 41, pl. xxi, figg. 1 & 2, STOLL, Acari in Biol. Centr.-Amer., n. sp.  
*Pteronyssus fuscus*, Nitz., pt. lxv, No. 2 ; BERLESE, Acari in Italia reperta.

## TROMBIDIIDÆ.

- Cheyletiella chanayi*, Berl. & Trouess., pt. lxvi, No. 3 ; BERLESE, Acari in Italia reperta.  
*Gekobia insignis*, pt. lxvi, No. 1, *loricata*, No. 2, BERLESE, Acari in Italia reperta, n. spp.  
*Rhyncholophus regalis*, Koch, pt. lxii, No. 6 ; BERLESE, Acari in Italia reperta.

## TYROGLYPHIDÆ.

- Glyciphagus peregrinus*, pt. lxv, No. 1, BERLESE, Acari in Italia reperta, n. sp.  
*Tyroglyphus wasmanni*, p. 397, MONIEZ, Rev. Biol. iv, n. sp.



## XII. MYRIOPODA AND PROTOTRACHEATA.

BY

R. I. Pocock.

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### MYRIOPODA.

- |   |                          |
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| I. TITLES, p. 1.                                    | III. DISTRIBUTION, p. 3. |
| II. ANATOMY,   PHYSIOLOGY,<br>PHYLOGENY, &c., p. 3. | IV. SYSTEMATIC, p. 3.    |

PROTOTRACHEATA, p. 6.

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### MYRIOPODA.

#### I. TITLES.

- BERLESE, A. *Acari, Myriopoda et Scorpiones hucusque in Italia reperta*.  
Padova. Pts. lxii, lxiv, lxvi, & lxvii.
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*Arthropoda* arose from setiparous sacs. Zool. Jahrb. v, p. 511.
- BROLEMAN, H. W. Contributions a la faune Myriapodologique Medi-  
terrannée. Dix espèces nouvelles. Ann. Soc. L. Lyon, xxix,  
pp. 7-40, pls. i-iii.
- CAMUS, F. Note sur la présence de *Geophilus submarinus*, &c., sur le  
côte de Préfaulle, Loire Inférieure. Bull. Sci. Nat. l'Ouest, Nantes,  
ii, No. 1, pp.
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Am. Nat. xxvi, pp. 1051-1055.

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- KOVALEVSKY, A. Sur les organes excréteurs des *Arthropodes* terrestres. Congr. Internat. Zool. pt. i, p. 187.  
*Myriopoda*, p. 205.
- LATZEL, R. Note sur quelques Myriapodes de Tahiti. Bull. Soc. Z. Fr. xvii, No. 7, pp. 185 & 186.
- POCOCK, R. I. (1) On the *Myriopoda* and *Arachnida* collected by Dr. Anderson in Algeria and Tunisia. P. Z. S. 1892, pt. i, pp. 24-28.
- . (2) Supplementary notes on the *Arachnida* and *Myriopoda* of the Mergui Archipelago, with descriptions of some new species from Spain and Malaysia. J. L. S. xxiv, pp. 319-326.
- . (3) Report upon two collections of *Myriopoda* sent from Ceylon by Mr. E. E. Green, and from various parts of Southern India by Mr. Edgar Thurston of the Government Central Museum, Madras. J. A. S. (Bombay) vii, No. 2, pp. 131-174.
- . (4) *Arachnida* and *Myriopoda* in W. L. Distant's Naturalist in the Transvaal. London (R. H. Porter) : 1892, pp. 179-184.
- PRENANT, A. Les corps intermédiaires de Flemming dans les cellules séminales de la Scolopendre et de la Lithobie. C.R. Soc. Biol. (9) iv, pp. 172-176.
- SINCLAIR, F. G. A new mode of respiration in the *Myriopoda*. P. R. Soc., No. 303, pp. 200 & 201 ; also in Ann. N. H. (6) ix, p. 263.
- VERHOEFF, C. (1) Vorläufige Mittheilung über eine neue deutsche *Chordeuma*-Art. Zool. Anz. xv, p. 109.
- . (2) Neue *Diplopoden* der paläarktischen Region. T. c. pp. 377 & 390, &c.
- . (3) Ein Beitrag zur Kenntniss der gattung *Chordeuma* (*Diplopoda*) und einige Notizen zur deutschen Diplopoden Fauna. B. E. Z. xxxvii, pp. 7-14.
- . (4) Bearbeitung der von A. F. Moller auf der Insel St. Thomas gesammelten Chilopoden und Diplopoden. T. c. pp. 192 & 193.
- . (5) Zur Kenntniss der Analpleurendrüsen bei Scolopendriden. T. c. pp. 203-208.
- ZOGRAF, N. Sur l'origine et les parentes des *Arthropodes* principalement des *Arthropodes* tracheates. Congr. Internat. Zool. 1892, pt. i, p. 278, &c.

## II.—ANATOMY, PHYSIOLOGY, PHYLOGENY, &amp;c.

Origin of tracheate Arthropods ; ZOGRAF.

Origin of tracheal tubes ; BERNARD.—Respiration of *Scutigera* ; SINCLAIR.

Nervous system, functions of ; CHILD.

Seminal cells of *Scolopendra* and *Lithobius* ; PRENANT.—Pleural glands of *Scolopendridæ* ; VERHOEFF (5).—Glands, coxal organs, &c., of *Chilopoda* ; HERBST.—Excretory organs ; KOVALEVSKY.

## III.—DISTRIBUTION.

*Palæarctic Region.*

W. Europe : various localities ; VERHOEFF (1-3).

Italy : BERLESE, BROLEMAN.

Coast of France : CAMUS.

Algeria and Tunisia : POCOCK (1).

*Ethiopian Region.*

St. Thomas (Gulf of Guinea) : VERHOEFF (4).

Transvaal : POCOCK (4).

*Oriental and Australian Regions.*

India and Ceylon : POCOCK (3).

Mergui : POCOCK (2).

Malaysia (Siam, Borneo, &c.) : POCOCK (2).

Tahiti : LATZEL.

## IV.—SYSTEMATIC.

## CHILOPODA.

## SCUTIGERIDÆ.

*Scutigera*, Lam., characterized with figures of details, pt. lxvi, No. 7 ;  
BERLESE, Myriopoda in Italia reperta.

## LITHOBIIDÆ.

*Henicops*, Newp., characterized, pt. lxvi, No. 8, *cæculus*, Brol., Milan,  
No. 9 ; BERLESE, Myriopoda in Italia reperta.

*Lithobius lapidicola*, Mein., pt. lxvi, No. 10, *lucifugus*, L. Koch, pt. lxvii,  
No. 3, *dentatus*, C. Koch, No. 4, Italy ; BERLESE, Myriopoda in  
Italia reperta.



- L. acuminatus*, Lombardy, p. 7, pl. i, fig. 1, BROLEMAN, Ann. Soc. L. Lyon, xxix ; *L. scutigeroides*, St. Thomas (Gulf of Guinea), p. 201, VERHOEFF, B. E. Z. xxxvii : n. spp.

## SCOLOPENDRIDÆ.

- Cormocephalus pygmaeus*, Madras, p. 140, Pocock, J. A. S. (Bombay) vii, n. sp.  
*Olostigma ceylonicum*, *splendens*, and *morsitans* compared, p. 140 ; Pocock, J. A. S. (Bombay) vii. *O. productum*, Karsch, St. Thomas (Gulf of Guinea), redescribed, p. 199 ; VERHOEFF, B. E. Z. xxxvii.  
*O. owenii*, Mergui, p. 319, Pocock, J. L. S. xxiv, n. sp.  
*Heterostoma spinosum*, *paucispinosum*, and *triste* compared, pp. 138 & 139 ; Pocock, J. A. S. (Bombay) vii.

## GEOPHILIDÆ.

- Chatechelyne*, Mein., characterized, pt. lxvi, No. 5 ; BERLESE, Myriopoda in Italia reperta.  
*Dignathodon*, Mein., characterized, pt. lxvi, No. 6 ; BERLESE, Myriopoda in Italia reperta.

## DIPLOPODA.

## POLYXENIDÆ.

- Polyxenus ceylonicus*, Punduloya (Ceylon), p. 142, Pocock, J. A. S. (Bombay), vii, n. sp.

## GLOMERIDÆ.

- Glomeris* characterized, pt. lxvii, No. 1, *marmorata*, C. Koch, pt. lxii, No. 1, varieties, No. 2, *hexasticha*, Br., No. 3, var. *pallidior*, No. 4, *multistriata*, C. Koch, No. 10, *aurita*, C. Koch, pt. lxiv, No. 7, *marginata*, Vill., No. 8, *connexa*, C. Koch, No. 9, var. *tenebrosa*, Latz., No. 10, from Italy ; BERLESE, Myriopoda in Italia reperta.  
*G. pusilla*, No. 9, Italy, BERLESE, Myriopoda in Italia reperta ; *G. occulto-colorata*, Coimbra, p. 390, VERHOEFF, Zool. Anz. xv : n. spp.  
*Gervaisia*, Waga, characterized, with figures of details, pt. lxvii, No. 2 ; BERLESE, Myriopoda in Italia reperta.  
*Zephronia brandti*, Humb., syn. *Z. chitonoides* and *rugulosa*, Butl., Ceylon, pp. 143 & 144 ; *inermis*, Humb., syn. *corrugata* and *leopardina*, Butl., Ceylon, pp. 144 & 145 ; *heterostictica*, Newp., syn. *lutescens* and *atri-sparsa*, Butl., Madras, pp. 145-147 ; Pocock, J. A. S. (Bombay), vii.

## POLYDESMIDÆ.

- Polydesmus subulifer*, n. sp., syn. *P. complanatus*, Auct. Ital., p. 10, pl. i, fig. 4; *brevimanus*, p. 13, fig. 3, *fissilobus*, p. 216, fig. 2, *bigeniculatus*, p. 20, fig. 5, n. spp., Lombardy, BROLEMAN, Ann. Soc. L. Lyon, xxix; *P. lusitanicus*, Coimbra, p. 389, VERHOEFF, Zool. Anz. xv, n. sp.
- Brachydesmus insculptus*, Algeria, p. 27, with fig., Pocock, P. Z. S. 1892, n. sp.
- Strongylosoma cingalense* and *skinneri* compared, pp. 150 & 151; Pocock, J. A. S. (Bombay) vii.
- S. setosum*, Mergui, p. 320, Pocock, J. L. S. xxiv; *S. greeni*, Ceylon, p. 140, pl. ii, fig. 14, *phipsoni*, Calcutta, p. 151, pl. i, fig. 4, & pl. ii, fig. 13, *jerdoni*, Madras, p. 152, Pocock, J. A. S. (Bombay) vii; *S. lusitanicum*, Portugal, p. 383, *bertkai*, Coimbra, p. 389, VERHOEFF, Zool. Anz. xv : n. spp.
- Leptodesmus tanjoricus*, Tanjore, p. 147, pl. i, fig. 3, Pocock, J. A. S. (Bombay) vii, n. sp.
- Cryptodesmus ceylonicus*, p. 153, pl. ii, fig. 2, *greeni*, p. 154, pl. ii, fig. 3, Ceylon, Pocock, J. A. S. (Bombay) vii, n. spp.
- Pyrgodesmus*, n. g., p. 155, for *P. obscurus*, n. sp., Ceylon, p. 155, pl. ii, fig. 1; Pocock, J. A. S. (Bombay) vii.

## CHORDEUMIDÆ.

- Atractosoma lombardicum*, p. 22, pl. ii, fig. 6, *tellinense*, p. 25, fig. 7, Lombardy, BROLEMAN, Ann. Soc. L. Lyon, xxix, n. spp.
- Chordeuma germanicum*, Rhineland, p. 109, VERHOEFF, Zool. Anz. xv, also p. 10, *id.* B. E. Z. xxxvii, n. sp.
- Craspedosoma dentatum*, p. 28, pl. ii, fig. 8, Lombardy, BROLEMAN, Ann. Soc. L. Lyon, xxix, n. sp.

## LYSIOPETALIDÆ.

- Stemmiulus*, Gervais, characterized, p. 156; Pocock, J. A. S. (Bombay) vii.
- S. ceylonicus*, Ceylon, p. 157, pl. i, fig. 2, Pocock, J. A. S. (Bombay) vii, n. sp.

## POLYZONIDÆ.

- Siphonophora humberti*, Ceylon, p. 173, Pocock, J. A. S. (Bombay) vii, n. sp.

## JULIDÆ.

- Julus intermedius*, p. 30, pls. ii & iii, fig. 9, *cantonii*, p. 36, pls. ii & iii, fig. 10, n. spp.; descriptions and figures of varieties of *J. luridus*, C. Koch, and *J. londinensis*, Leach, pp. 38 & 39, pls. ii & iii, figg. 12 & 13; BROLEMAN, Ann. Soc. L. Lyon, xxix: *J. alemannicus*, n. sp., Heidelberg, p. 377; synopsis of the males of the *fallax* group, p. 379; *J. mollerii*, p. 381, *frisioides*, p. 383, n. spp., Coimbra; VERHOEFF, Zool. Anz. xv.
- Hemipodius*, n. subg. of *Julus*, for *J. (H.) karschi*, n. sp. (? syn. *J. lusitanicus*, Karsch), Portugal; VERHOEFF, p. 380, Zool. Anz. xv.
- Spirostreptus malabaricus*, Gerv., Kortallum, pp. 158 & 159, *nigrolabiat*us, Newp., Madras, p. 159, pl. i, fig. 7, & pl. ii, fig. 5, *lankaensis*, Humb., Ceylon, p. 165, pl. ii, fig. 6; Pocock, J. A. S. (Bombay) vii.
- S. asthenes*, *jerdoni*, Madras, p. 161, *centrurus*, p. 162, pl. ii, fig. 4, *insculptus*, Ceylon, p. 163, pl. i, fig. 8, Pocock, J. A. S. (Bombay) vii; *S. bowringii*, Siam, p. 321, fig. 1, *perakensis*, Perak, p. 322, fig. 2, *patricii*, Batavia, fig. 3, *hosei*, p. 323, fig. 4, *everettii*, N. W. Borneo, p. 324, fig. 5, *dulit*ianus, Mt. Dulit, p. 325, fig. 6, *baluensis*, Mt. Kina Balu, p. 326, fig. 2, Pocock, J. L. S. xxiv; *S. transvaalicus*, Pretoria, p. 181, fig., Pocock, in Distant's Naturalist in Transvaal; *S. mollerii*, St. Thomas (Gulf of Guinea), p. 193, pl. v, fig. 199, VERHOEFF, B. E. Z. xxxvii: n. spp.
- Odontopyge pretoriae*, Pretoria, p. 183, Pocock, in Distant's Naturalist in Transvaal, n. sp.
- Spirobolus carnifex*, Fabr., syn. *rusticollis*, Newp., Madras, and Ceylon, p. 166, pl. ii, fig. 9, *goëssii*, Porath, syn. *dominicæ*, Pocock, Madras, p. 167; Pocock, J. A. S. (Bombay) vii.
- S. thurstoni*, p. 167, pl. i, fig. 9, & pl. ii, fig. 8, *uroceros*, p. 169, pl. ii, fig. 7, Madras, *greeni*, pl. i, fig. 10, *longicornis*, pl. ii, fig. 11, p. 170, *longicollis*, p. 172, pl. ii, fig. 10, Ceylon, Pocock, J. A. S. (Bombay) vii; *S. nannodes*, Tahiti, p. 186, LATZEL, Bull. Soc. Ent. Fr. xvii: n. spp.

## PROTOTRACHEATA.

BERNARD, H. M. The *Apodida*: a Morphological Study. Nature Series. London (Macmillan & Co.): 1892.

Section xvi of this work is set apart for the consideration of *Peripatus*.

DENDY, A. Further observations on the eggs of *Peripatus*. Austr. Ass. Adv. Sci. 1892, pp. 10-14.

—. On the Oviparity of *Peripatus leuckartii*. P. R. Soc. Vict. iv, pt. i, p. 31.

[DENDY, A.] Further Notes on the Oviparity of the larger Victorian *Peripatus*, generally known as *P. leuckartii*. P. Linn. Soc. N.S.W. vii, pt. ii, pp. 267-276 ; also Ann. N. H. (6) x, p. 136.

FLETCHER, J. J. A Viviparous Australian *Peripatus* (*P. leuckartii*, Sânger). P. Linn. Soc. N.S.W. vii, pp. 179-196.

GRABHAM, M., & COCKERELL, T. D. A. *Peripatus* rediscovered in Jamaica. Nature, xlvi, p. 514.

*P. jamaicensis*. n. sp.

POCOCK, B. I. *Peripatus* from St. Vincent. T. c. p. 100.

Rediscovery of *P. juliformis*.



## XIII. INSECTA.

BY D. SHARP.

THE number of titles in this RECORD is 1026, the number for 1891 being 974.

During the year commencements have been made with two works that will, no doubt, be of much use when completed, viz., DALLA TORRE'S (198) Catalogue of *Hymenoptera* and KIRBY'S Catalogue of Moths (496). The latter work resembles its well-known predecessor, the "Synonymic Catalogue of Butterflies," except that it has not been thought necessary to give the synonymy of the European species in full: a decision that will, no doubt, be considered wise in view of the fact that this volume extends, even as it is, to nearly 1000 pages.

Two parts of the Entomology of GRANDIDIER'S work on Madagascar have been published. They both relate to *Hymenoptera*. One of them, by FOREL (287), is an excellent systematic treatise on the Ants: the other is by DE SAUSSURE (793); it treats of the rest of the *Aculeate Hymenoptera*, and proposes some modifications in the classification of the *Fossoria*. Some *Terebrantia* are figured on the plates, but are not alluded to in the letterpress.

Considerable progress has been made with the *Biologia Centrali-Americana*. But to us in Britain, perhaps, the most interesting faunistic work of the year is the first volume of HAMPSON'S Moths (384), forming part of the valuable "Fauna of British India," and published under the auspices of the Secretary of State for India. This volume is well executed, and will augment the good reputation of the series of which it forms a part. All entomologists will wish that the other orders of Insects could be dealt with in due course, but we fear that material sufficient for the purposes of such a work does not yet exist in collections.

The papers by FOREL (293) and WROUGHTON (1018) on the Ants of India should be noticed, not only on account of the amount of information they give on the subject, but also as showing what an extensive field of work for entomologists exists in India.

MEYRICK has given us another instalment (603) of his arrangement of *Lepidoptera*, on the basis of wing-neuration; and SPULER also gives us

(881) a study on this subject, but finds himself not quite able to agree with his predecessors in this field of enquiry.

HOFFBAUER has made a very interesting contribution (405) to a knowledge of the structure of the elytra of *Coleoptera*: this memoir, and RILEY's study of *Pronuba* and *Yucca* (742), will, no doubt, be considered as amongst the most attractive of the papers enumerated in this RECORD. So much interest, too, attaches to the conclusions announced in GRASSI's summary of his observations (359) on *Termitidæ*, that entomologists will wait for further details with some impatience.

The most interesting Insects described in 1892 are probably the two *Blattids* discovered by SIMON in caves in the Philippine Islands, and described by BOLIVAR (710) as forming the new genus he calls *Nocticola*.

HENKING (396) discusses a considerable variety of points in the early stages of development of the embryo, including the development in the parthogenetic eggs of some *Hymenoptera*; and we also record what we fear must be the last (355) of GRABER's series of papers on the comparative embryology of Insects.

We owe thanks to TASCHENBERG for his apparently exhaustive treatise (915) on the history of the literature of Parthenogenesis.

The Recorder regrets he can form no opinion as to PORTSCHINSKY's remarks on the biology of *Diptera* (698), and on the origin of striking coloration in *Lepidoptera* (700), owing to their being written entirely in the Russian language.

## I.—TITLES.\*

1. ABAILLE, E. DE PERRIN. Notices entomologiques. Rev. d'Ent. xi, pp. 62-67. [*Coleoptera*.]
2. ——. Deux nouvelles espèces de *Clérides*. Bull. Soc. Ent. Fr. lxi, p. ccxxxvi. [*Coleoptera*.]
3. ADELUNG, N. VON. Beiträge zur Kenntniss des tibialen Gehörapparates der *Locustiden*. Z. wiss. Zool. liv, pp. 316-349, pls. xiv & xv. [*Orthoptera*.]
4. ALPHERAKY, S. *Lepidoptera* nova a Gr. Grum-Grshimailo in Asia centrali novissime lecta. Hor. Ent. Ross. xxvi, pp. 444-459.  
——. [See also ROMANOFF (779).]
5. ALDRICH, J. M. New species of *Phora*. Canad. Ent. xxiv, pp. 142-146. [*Diptera*.]
6. ——. A new genus and species of *Tabanidæ*. Psyche, vi, p. 236. [*Diptera*.]

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\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

7. ALLARD, E. Collection d'insectes formée dans l'Indo-Chine par M. Pavie, Consul de France au Cambodge. *Coléoptères. Phytophages*. N. Arch. Mus. Paris (3) iii, pp. 229-234.
8. ALLUAUD, C. Deux nouvelles espèces de *Coléoptères*. Bull. Soc. Ent. Fr. lxi, pp. cccxxviii & cccxxix.
9. ANDERSON, E. Notes on some Victorian *Lepidoptera*. Vict. Nat. ix, pp. 80-93.  
Some interesting remarks on habits and variation.
10. ANDERSSON, J. Bidrag till Kännedomen om Nagelspinnarens (*Aglia tau*, L.) utvecklingshistoria. Ent. Tidskr. xiii, pp. 93-96. [*Lepidoptera*.]
11. ANDRÉ, E. Species des *Hyménoptères*. 41 Fasc. pp. 89-144, pla. iv, viii, & x.  
Continuation of *Chrysididae*, by R. du Buysson.
12. —. Matériaux myrmécologiques. Rev. d'Ent. xi, pp. 45-56. [*Hyménoptera*.]
13. —. Voyage de M. Chapar à Borneo. Catalogue des Fourmis et description des espèces nouvelles. Mém. Soc. Zool. v, pp. 46-55. [*Hyménoptera*.]
14. ANGELL, G. W. J. Two new species of *Coleoptera*. Ent. News, iii, p. 84.
15. ARRIBALZAGA, F. L. *Dipterologia Argentina* (Continuación). An. Soc. Arg. xxxiii, pp. 51-59, 111-122, 188-200, 236-254, and xxxiv, pp. 33-46, 173-192, & 241-280.
16. ASHMEAD, W. H. The Insect collections in the Berlin Museum. P. E. Soc. Wash. ii, pp. 205-211.  
141,000 species of Hexapoda.
17. —. Notes on the genus *Melittobia*. T. c. pp. 228-232. [*Hyménoptera*.]
18. —. On the discovery of the genus *Eunotus* in America. T. c. pp. 287 & 288. [*Hyménoptera*.]
- 18A. —. Notes on the genus *Enicocephalus*, Westwood, and description of a new species from Utah. T. c. pp. 328-333. [*Rhynchota*.]
19. —. Notes on the *Eucharids* found in the United States. T. c. pp. 354-358. [*Hyménoptera*.]
20. —. Discovery of the genus *Cratæpus*, Förster, in America, and the description of a new species. Canad. Ent. xxiv, p. 309. [*Hyménoptera*.]
21. —. Three new *Pambolids* from the United States. Psyche, vi, pp. 289 & 290. [*Hyménoptera*.]



22. [ASHMEAD, W. H.] Two new and remarkable *Ophionids*. Ent. News, iii, p. 105. [*Hymenoptera*.]
23. AURIVILLIUS, C. Nordens fjarilar. Handbok i Sveriges, Norges, Danmarks och Finlands *Macrolepidoptera*. 4to, pp. lii & 277, 50 plates and 35 woodcuts. Stockholm, 1888-1891.  
He adopts three divisions for *Lepidoptera*, viz., Neolepidoptera, Mesolepidoptera, and Palæolepidoptera.
24. —. Verzeichniss einer vom Herrn Fritz Theorin aus Gabun und dem Gebiete des Camerunflusses heimgebrachten Schmetterlingsammlung. II. *Heterocera*. Ent. Tidskr. xiii, pp. 181-200. [*Lepidoptera*.]
25. —. Collection d'insectes formée dans l'Indo-Chine par M. Pavie, Consul de France au Cambodge. *Coléoptères, Curculionines*. N. Arch. Mus. Paris (3) iii, pp. 205-224.
26. —. Eine neue Palæarktische Eulengattung. Ent. Tidskr. xiii, p. 285. [*Lepidoptera*.]
27. —. Leddjurens synförmåga. *T. c.* pp. 171-180.  
Relates chiefly to Exner's views on vision.
28. —. Om slökörn-flugan (*Oscinis frit*, L.) ett gif-akt till sveriges Kornodlare. *T. c.* pp. 209-224. [*Diptera*.]
29. AUSTAUT, L. Deux *Sphingides nouveaux* de l'Asie orientale. Le Nat. 1892, pp. 68 & 69. [*Lepidoptera*.]
30. BAKER, G. T. B. Notes on *Lycæna* (recte *Thecla*) *rhymnus*, *tengstræmii*, and *pretiosa*. Tr. Ent. Soc. 1892, pp. 27-31, pl. ii. [*Lepidoptera*.]
31. BALBI, E. Diagnosi e descrizioni di due nuove specie di *Coleotteri*. Riv. Ital. Sci. Nat. xii, pp. 49 & 50.
32. \*— Contributione alla Fauna *coleotterologica* d'Europe. Cf. Wien. ent. Z. xi, p. 251.
33. BANKS, N. A synopsis, catalogue, and bibliography of the *Neuropteroid* Insects of Temperate North America. Tr. Am. Ent. Soc. xix, pp. 327-373.
34. BARRETT, C. G. The *Lepidoptera* of the British Islands. London, 8vo.  
Intended to include all the British *Lepidoptera*. Parts I-V have been at present published.
35. BATAILLON, E. Sur le déterminisme physiologique de la métamorphose chez le ver-à-soie. C.R. cxv, pp. 61-64.
36. BATES, H. W. Additions to the *Longicornia* of Mexico and Central America, with remarks on some of the previously-recorded species. By the late Henry Walter Bates, with an Introduction by Frederick DuCane Godman. Tr. Ent. Soc. 1892, pp. 143-183, pls. v-vii. [*Coleoptera*.]

37. [BATES, H. W.] *Coléoptères* du Bengale occidental. Seconde liste des *Carabidæ*. Ann. Ent. Belg. xxxvi, pp. 230-233.
38. —. Viaggio de Leonardo Fea in Birmania e regioni vicine. XLIV, List of the *Carabidæ*. Ann. Mus. Genov. (2) xii, pp. 267-428. [*Coleoptera*.]
39. —. The Naturalist on the River Amazons: reprint of the unabridged edition, with a memoir of the author by Edward Clodd. London, 8vo, 1892.
40. BATESON, W. On Variation in the Colour of Cocoons of *Eriogaster lanestris* and *Saturnia carpini*. Tr. Ent. Soc. 1892, pp. 45-52. [*Lepidoptera*.]  
Summary in J. R. Micr. Soc. 1892, p. 469.
41. —. On Variation in the Colour of Cocoons, Pupæ and Larvæ: further experiments. T. c. pp. 205-214. [*Lepidoptera*.]
42. BATESON, W., & BRINDLEY, H. H. On some cases of Variation in Secondary Sexual Characters, statistically examined. P. Z. S. 1892, pp. 585-594. [*Coleoptera*, *Orthoptera*.]
43. BAUDI, F. Di una nuova specie del genere *Tritoma*, Geoffr. Nat. Sicil. xi, p. 121. [*Coleoptera*.]
44. BECKER, A. Neue Pflanzen- und Insektenentdeckungen in der Umgegend von Sarepta, und Zusammenstellung der Raupen und Käfer die nur von einer Pflanzenart, und zwei, drei, Pflanzenarten leben, die aber zu einer Familie gehören. Bull. Soc. Mosc. 1892, pp. 62-70.
45. BECKER, TH. Eine neue *Leptis* aus der Schweiz. Wien. ent. Z. xi, p. 23. [*Diptera*.]
46. BEDDARD, F. E. Animal Coloration: an account of the principal facts and theories relating to the colours and markings of animals. London, 8vo, 288 pp., iv pla.  
Includes much Entomology.
47. BEDEL, L. Synopsis des grands *Hydrophiles*. Rev. d'Ent. x, pp. 306-322. [*Coleoptera*.]
48. —. Description de deux *Coléoptères* hétéromères du nord de l'Afrique. Ann. Mus. Genov. (2) x, pp. 794 & 795.
49. —. Synopsis des *Chironitis*, *Onitis* et *Bubas* de la région méditerranéenne: extrait de la monographie des *Onitides* de G. van Lansberge. Abeille, xxvii, pp. 257-280. [*Coleoptera*.]
50. —. Revision des *Scarabæus* palæarctiques. T. c. pp. 281-288. [*Coleoptera*.]
51. —. Renseignements sur les mœurs et le développement des *Meloidæ*. T. c. pp. 235-250 & 304. [*Coleoptera*.]

52. BEHR, H. H. Some Biological Peculiarities of the *Phylloxera* and a Method for utilising them for the Protection of Vineyards. *Zoe*, ii, pp. 305-310.
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Competition of ♂ bees, VERHOEFF (968).—Darwinism, VONHOF (977).—The phylogeny and embryonic morphology of insects, CHOLODKOVSKY (170).—Phylogeny of social *Hymenoptera*, VERHOEFF (964) ; phylogeny of *Papilionidæ*, SPULER (882).—Wing-neuration and phylogeny of *Lepidoptera*, SPULER (881).—Homology of elytra of *Coleoptera*, HOFFBAUER (405).

Styloized bees, PERKINS (674), and THEOBALD (920).—Ants-nest beetles, WASMANN (986), WICKHAM (1005).—Galls : BRODIE (129), LIEBEL (562), MARTEL (584), MIK (610).—Classification of galls, KERNER (480).—Galls of *Cecidomyiidæ*, KIEFFER (493), RÜBSAAMEN (786), THOMAS (925).—Alpine *Cecidomyioides* galls, THOMAS (924).—Galls of Lorraine, KIEFFER (495).—Galls on *Muhlenbergia mexicana*, insects reared from, WEBSTER, Canad. Ent. p. 243 ; of *Eurosta solidaginis*, BRODIE (130).

Plants and ants, KELLER (475), WARBURG (982).

Insects and flowers : Insects attacking man. [See Economic.]

## III.—FAUNISTIC AND PALÆONTOLOGY.

The numbers in brackets refer to "Titles"; by their means it is intended to give a reference to every memoir containing a notice affecting the entomological fauna of each of the twelve regions here made use of. But synonymical notes and changes of systematic position are not included in these references.

New species, whose locality is not known :—*Coleoptera* : *Rhabdopholis melolonthoides*, cf. *Scarabeidæ*. *Hymenoptera* : *Evania cribrata*, cf. *Hym. par. Evaniidæ*. *Lepidoptera* : *Rhodoneura notula*, cf. *Pyalidæ*, &c. *Diptera* : *Bellardia furcata*, *Atylotus erraticus*, *rubrinotatus*, BIGOT. *Orthoptera* : *Mecopoda divergens*, cf. *Locustidæ*; *Phyllozelus genicularis*, n. g. & sp., *Brochopeplus reticulatus*, n. g. & sp., cf. *Locustidæ*. •

## 1. ARCTIC AND ANTARCTIC.

West Greenland (*Insecta*), FOX (298).

Greenland (*Lepidoptera*), SKINNER & MENGEL (850); (*Diptera*), BRAUER & BERGENSTAMM (119).

## 2. INSULAR (INCLUDING NEW ZEALAND).

Iceland (*Coleoptera*), SÉNAC, Bull. Soc. Ent. Fr. lxi, p. xxviii.

Madeira (*Diptera*), BIGOT (85).

Madeira and Azores (*Orthoptera*), BOLIVAR, Bull. Soc. Z. Fr. 1892, pp. 46–49.

Canary Is. (*Coleoptera*), SÉNAC (836); (*Hymenoptera*), FOREL (291), KOHL (501); (*Lepidoptera*), ALLUAUD, Bull. Soc. Ent. Fr. lxi, p. ccxxxix, REBEL (715); (*Diptera*), BRAUER & BERGENSTAMM (119); (*Orthoptera*), KRAUSS (521).

St. Helena (*Odonata*), CALVERT (150).

Fiji Is. (*Orthoptera*), KARSCH (471, p. 343).

Fiji and Pelew Is. (*Orthoptera*), REDTENBACHER (717).

Loyalty Group (*Lepidoptera*), ROTHSCHILD (782).

Admiralty and Solomon Is. (*Coleoptera*), FAUST (278).

New Hebrides (*Coleoptera*), DESBROCHERS (203).

New Ireland (*Lepidoptera*), HONRATH (412).

New Caledonia (*Rhynchota*), DISTANT (214), and MONTANDON (617).

Norfolk I., New Caledonia (*Rhynchota*), DISTANT (213).

Pitcairn I. (*Lepidoptera*), WARREN (983).

S. Pacific Is. (*Lepidoptera*), DRUCE (227).

New Zealand and New Caledonia (*Diptera*), BIGOT (85).

New Zealand (*Insecta*), HUDSON (440); Insects introduced, *Ins. Life*, iv, p. 339; (*Coleoptera*), HORN (421); *Platysoma jejunum* withdrawn,

LEWIS (555) ; (*Hymenoptera*), FOREL (294), MARSHALL (583) ; (*Lepidoptera*), MEYRICK (605), WARREN (983) ; (*Coccidæ*), MASKELL (590).

Hawaiian Is. (*Neuroptera*), MACLACHLAN (574).

Galapagos (*Diptera*), BRAUER & BERGENSTAMM (119).

### 3. PALEARCTIC REGION.

#### (a.) *The Region.*

*Coleoptera.* BALBI (31, 32), DESBROCHERS (201, 202, 204, 205, 207, 208, 209), ESCHERICH (259), GANGLBAUER (319), GUILLEBEAU (373), JAKOWLEFF (451), REITTER (724), SCHWARZ (809, 810), STIERLIN (899, 900, THÉRY (921).

*Hymenoptera.* BERTHOUMIEU (74), HANDLIRSCH (386), JAKOWLEW (453), KOHL (501), SEMENOW (828, 829).

*Lepidoptera.* ROMANOFF (779), RÜHL (789), STAUDINGER (886, 887), *id.* [S. Siberia] (891), WARREN (983).

*Diptera.* BIGOT (83, 85), BRAUER & BERGENSTAMM (119), MIK (608), PORTSCHINSKY (699).

*Rhynchota.* PUTON (707, 708).

#### (b.) *Collective Europe.*

*Hymenoptera.* ANDRÉ (11), KONOW (510), THOMSON (927).

*Diptera.* KOWARZ (512), RÜBSAAMEN (787).

*Rhynchota.* HORVATH (429).

#### (c.) *British Islands.*

##### ADDITIONS.

*Coleoptera.* BLATCH, novelty, Ent. M. M. xxviii, p. 160.—CHAMPION, novelty, *t. c.* p. 68.—BLATCH & HORNER, n. sp. (103).

*Hymenoptera.* BIGNELL, n. sp. (82).

*Lepidoptera.* BARRETT, novelty, Ent. M. M. xxviii, p. 244.—WOOD, novelties, n. spp. (1014) ; *id.* n. sp. (1015).

*Diptera.* MEADE, n. sp. (595), n. sp. (596), novelty, n. sp. (597).—VERRALL, n. sp. (971).

*Aphaniptera.* SAUNDERS, novelty, Ent. M. M. xxviii, p. 66.

*Rhynchota.* SAUNDERS, novelties, Ent. M. M. xxviii, p. 8 ; novelty, *id. t. c.* p. 258.

*Coccidæ.* NEWSTEAD, novelties, n. spp. (637).

*Neuroptera.* MORTON, novelty, Ent. M. M. xxviii, p. 108.

##### LOCAL LISTS.

*Insecta.* East Sussex, PORRITT, Ent. M. M. xxviii, p. 227.—Bristol (Phenological), P. Bristol Soc. vii, pp. 10 & 11.—Bayswater, PASCOE, Ent. M. M. xxviii, p. 230.—Withernsea, BAKER & PORTER, Naturalist, 1892, pp. 296 & 297.

*Coleoptera.* Cornwall, ISABELL, Rep. Penzance Soc. 1891-92, p. 376.—Plymouth, KEYS, Ent. M. M. xxviii, p. 23.—New Forest, CHITTY, Ent. M. M. xxviii, p. 24, and *t. c.* p. 216.—Hastings, BENNETT, Ent. M. M. xxviii, p. 193.—Gomshall, BUTLER, Ent. M. M. xxviii, p. 268.—Welling-ton, ELTON, Ent. M. M. xxviii, p. 288.—Woking, CHAMPION, Ent. M. M. xxviii, p. 193, and *t. c.* p. 243.—Gloucestershire, SHIPP, *t. c.* p. 288.—Cardiff, STORRIE, Rep. Cardiff Soc. xxiv, p. 64.—Cambridge, FOWLER, Ent. M. M. xxviii, p. 215.—Withernsea, FOWLER, *t. c.* p. 215.—Doncaster BAYFORD, *t. c.* p. 267.—Birkenhead, ELLIS, Ent. xxv, p. 144.—The *Hydradephaga* of Lancashire and Cheshire, W. E. SHARP, Naturalist, pp. 189, &c., &c.—Scotland, CHAMPION, Ent. M. M. xxviii, p. 243.—Some additions to Scottish *Coleoptera*, with notes on species new or rare in the "Solway" district, LENNON & DOUGLAS, Ann. Scot. N. H. i, pp. 107-115.—Kirkcudbright, DOUGLAS, *t. c.* p. 271.—Loch Awe, CHITTY, Ent. M. M. xxviii, p. 216.—Elginshire and Mid Lothian, EVANS, Ann. Scot. N. H. i, p. 78.—Ireland, CUTHBERT, Brit. Nat. ii, p. 29; JOHNSON, Ent. M. M. xxviii, p. 213.—N. Ireland, JOHNSON, *t. c.* p. 134.—Donegal, JOHNSON, *t. c.* p. 310.—Louth, CUTHBERT, Irish Nat. i, p. 158; Dublin, BROWNE, *t. c.* p. 189.—Armagh, JOHNSON, *t. c.* pp. 14, &c.

*Strepsiptera.* Surbiton, SAUNDERS, Ent. M. M. xxviii, p. 249; Bruton, EATON, *t. c.* p. 250.

*Hymenoptera.* Wotton-under-Edge, PERKINS, Ent. M. M. xxviii, p. 135.—Shirley, ROTHNEY, *t. c.* p. 51.—Rugby, MORICE, Rep. Rugby Soc. 1891, pp. 56-60.—Norfolk, BRIDGMAN, Tr. Norw. Soc. iv, p. 690; Fauna and flora of Norfolk: part xii, Phytophagous *Hymenoptera* (Sawflies), Tr. Norw. Soc. iv, pp. 523-536.—Yorkshire, NELSON, SUMMERFIELD, ROEBUCK, WILSON, Naturalist, 1892, p. 325.—A preliminary list of the *Aculeata* of Lancashire and Cheshire; Brit. Nat. ii, pp. 21-23, &c.—Scotland, TRAIL (1950).—Dunbar, POW, Ann. Scot. N. H. ii, p. 79.—Perthshire, M'GREGOR, Tr. Perthsh. Soc. i, pp. 65-72 & 152.

*Lepidoptera.* The *Lepidoptera* of Britain, BARRETT (34).—Label list of British *Lepidoptera*: (first part) issued as a supp. to J. Inst. Cornwall, xi.—Notes concerning local British Butterflies, GOSS, Ent. M. M. xxviii, p. 44.—Immigration of *Pieris brassicae*, KERRY (490).—Occurrence of *Deiopeia pulchella* in England, SOUTH, Ent. xxv, pp. 153-155, 166-168, & 191.—*Ocneria dispar* in England, SOUTH, Ent. xxv, p. 259.—*Colias edusa* in England in 1892, Ent. M. M., Ent., Ent. Rec., &c., numerous notices.—Introduction of *Callimorpha hera*, LUFF, Ent. M. M. xxviii, p. 21.—S. Devon, BROOKS, Ent. M. M. xxviii, p. 280; PRIDEAUX, Ent. xxv, p. 221; BIGNELL, *t. c.* p. 256.—Sidmouth, WELLS, Ent. xxv, pp. 67 & 68.—Ilfracombe, BOYD, P. E. Soc. 1892, p. vii.—Exeter, STILL, Ent. M. M. xxviii, p. 132; BARRETT, P. E. Soc. 1892, p. xiv.—Plymouth, BRIGGS, Ent. xxv, pp. 45-47.—Dartmoor, STILL, *t. c.* pp. 228-230.—Dorset, CAMBRIDGE, Ent. xxv, p. 196; DALE (196), RICHARDSON (740).—Bloxworth, CAMBRIDGE, Ent. xxv, pp. 82-84.—Parbeck, BANKES, Ent. M. M. xxviii, pp. 48 & 49, and *t. c.* pp. 308 & 309.—Lepidopterous fauna of Portland, RICHARDSON (739).—Bournemouth, ADYE, P. E. Soc. 1892,

p. xxv.—New Forest and Swanage, ALDERSON, Ent. xxv, pp. 313–315.—Lyndhurst, JACKSON, *t. c.* p. 219.—Freshwater, STEVENS, P. E. Soc. 1892, p. xi.—Winchester, NEVINSON, Ent. xxv, p. 169.—Hastings, BLOOMFIELD, Ent. M. M. xxviii, p. 267.—Brighton, FIELD, Ent. xxv, p. 318.—East Sussex, TUGWELL, *t. c.* pp. 156–159.—Folkestone, PARTRIDGE, Ent. M. M. xxviii, p. 265.—Shorncliffe, *id.* *t. c.* p. 191.—Ashford, VIGGERS, Ent. xxv, p. 289.—Tunbridge Wells, BEECHING, P. E. Soc. 1892, p. xxv.—Dorking, FLOOD, Ent. xxv, p. 169.—Surbiton, GOSS, Ent. M. M. xxviii, p. 246.—Alton, REID, Ent. xxv, p. 220.—Middlesex, COCKERELL, *t. c.* pp. 115–118, 130–134, 182–185, & 203–207.—Crouch End, JAMES, *t. c.* pp. 65–67.—Tineina, &c., at Sandridge, GRIFFITH, Tr. Hertf. Soc. vi, pp. 97–102.—Wellington, GHICA, Rep. Wellington Soc. xxiii, p. 49.—Marlborough, MEYRICK, Rep. Marl. Coll. Soc. xi, pp. 124, &c.—Essex, FITCH, Ess. Nat. vii, pp. 115 & 140; COLE & ARGENT, *t. c.* pp. 140 & 141.—Notes on the *Lepidoptera* of Northamptonshire, EDWARDS, J. Northampt. Soc. 1891, pp. 235, &c., and 1892, pp. 19–23.—Nottinghamshire, BARRETT, Ent. M. M. xxviii, p. 267.—Suffolk, RENDLESHAM, Ent. xxv, p. 244.—Aldeburgh, CRUTTWELL, Ent. M. M. xxviii, p. 253.—Norfolk, BARRETT, P. E. Soc. 1892, p. xxvii; and Tr. Norw. Soc. iv, pp. 691–701.—Ranworth, WHEELER, Ent. M. M. xxviii, p. 203.—Staffordshire, WOODFORDE, Ent. xxv, p. 241.—North Staffordshire, DALTRY, *t. c.* p. 95.—N. Staffordshire, DALTRY, Rep. N. Staffordsh. Club, 1888, p. 11; 1889, p. 12; 1890, p. 15; 1891, p. 14; 1892, p. 74.—Delamere Forest, ARKLE, Ent. xxv, p. 145.—Lincoln, CARR, Ent. M. M. xxviii, pp. 130 & 131.—Halifax, HALLIDAY, Naturalist, 1892, p. 339.—York, HEWETT, Ent. xxv, pp. 170–172.—Isle of Man, CLARKE, Brit. Nat. ii, p. 24, and Lioar Man, pp. 287, &c., &c.—Windermere, MOSS, Ent. xxv, p. 246.—Westmoreland, NEVINSON, *t. c.* p. 144.—Carlisle, ROUTLEDGE, *t. c.* p. 169.—A list of the *Macro-Lepidoptera* of Balerno, Mid Lothian, Ann. Scot. N. H. i, pp. 39, &c.—Jura, EVANS, *t. c.* p. 141.—Perth, WHITE, *t. c.* p. 271.—Rannoch, ADKIN, Ent. xxv, pp. 105–110.—Aberdeenshire, REID, Brit. Nat. i, p. 66, &c.; ii, p. 80, &c.—Lochinvar, BEVERIDGE, Ann. Scot. N. H. i, pp. 172–177.—Armagh, JOHNSON, Ent. M. M. xxviii, p. 217; Mourne district, WATTS, *l. c.*

*Diptera.* South Devon, MATTHEWS, Ent. M. M. xxviii, p. 268.—Horrabridge, DALE, *t. c.* p. 310.—*Diptera* of Dorsetshire, DALE, Brit. Nat. i, p. 3, &c.; ii, p. 63, &c.—Glanvilles Wootton, DALE, Ent. xxv, p. 72.—Dorset and Hants, DALE, Ent. M. M. xxviii, p. 268.—Sutton Park, BRADLEY, Ent. M. M. xxviii, p. 110.—Sherwood and Wyre Forests, *id.* *t. c.* p. 290.—North Uist, DALE, *t. c.* p. 50.

*Rhynchota.* The *Hemiptera-Heteroptera* of Britain, SAUNDERS (792).—Additions to the list of *Hemiptera-Heteroptera* collected in the Island of Guernsey, LUFF, Ent. M. M. xxviii, p. 7.—Woking, SAUNDERS, *t. c.* p. 218.—Remarks on some *Hemiptera-Heteroptera* taken in the neighbourhood of Bath, BLATHWAYT, P. Bath Club, vi, pp. 315–326. List of terrestrial *Hemiptera-Heteroptera* taken in the neighbourhood of Bath, *id.* *t. c.* pp. 432–435.—Chobham and Surbiton, SAUNDERS, Ent. M. M.

xxviii, p. 290.—Norfolk, EDWARDS, Tr. Norw. Soc. iv, pp. 702–710.—Chesil Bank, *Coccidæ*, DALE, Ent. M. M. xxviii, p. 219.

*Neuroptera*. Localities for Dragon-flies, Sci. Goss. 1892, pp. 17, &c., &c.—*Neuroptera* observed in the Channel Islands in September, 1891, MCLACHLAN, Ent. M. M. xxviii, pp. 4–6.—A list of the *Neuroptera* inhabiting the Island of Guernsey, LUFF, Rep. Guernsey Soc. 1891, pp. 155–160.—Guernsey, LUFF, Ent. M. M. xxviii, pp. 72 & 73.—Sark, MCLACHLAN, Ent. M. M. xxviii, p. 74.—Leatherhead, BRIGGS, t. c. pp. 194 & 268.—Chippenham, KING, t. c. p. 246.—Penistone, PORRITT, t. c. p. 311.—Ireland, MORTON, t. c. pp. 110 & 301.

*Orthoptera*. Norfolk, SHAW, P. E. Soc. 1892, p. xxvii.

(d.) *North Europe and Siberia* [see also (a.) and (b.)].

*Insecta*. KLÆR, Ent. Tidskr. xiii, p. 92.

*Coleoptera*. Sweden, LAMPA, Ent. Tidskr. xiii, p. 208.—Siberia, BERGROTH (60); REITTER, Wien. ent. Z. xi, pp. 187, 188.—E. Siberia, BRENSKE (123), WEISE (995).

*Hymenoptera*. Norway, Fortegnelse over nogle for Norges Fauna nye arter af *Phytophage Hymenoptera*, KLÆR, Ent. Tidskr. xiii, pp. 67–70.—Sweden, NERÉN (631).

*Lepidoptera*. Scandinavia, AURIVILLIUS (23); SAHLBERG, Ent. Tidskr. xiii, p. 291.—Roldal, WALKER, Ent. xxv, pp. 36–39.—Christiania, HUITFELDT-KAAS, Ent. Tidskr. xiii, pp. 78–80.—Sweden, AMMITZBÖLL, Ent. Tidskr. xiii, p. 73.—Siberia, CHRISTOPH (175), RAGONOT (712), ROMANOFF (779).—Amurland, GRAESER, (356).—S. Siberia, *Lep.* see (a.).

*Rhynchota*. Siberia, JAKOWLEFF (452), BERGROTH (65).

*Diptera*. Norway, BIDENKAP (81); Sweden, LAMPA (537).—*Thysanura*. Siberia, REUTER (734).

(e.) *Central and Eastern Europe* [see also (a.) and (b.)].

*Insecta*. Belgium, SELYS (826).—Germany, BRISCHKE (126, 127).—Rheinland, VERHOEFF, Ent. Nachr. xviii, p. 3.—Galls of Lorraine, KIEFFER (495).—St. Gall, WEGELIN, Ber. St. Gall. Ges. 1890–91, pp. 307–335.—Trencsen, BRANCSIK, Jahresheft. Ver. Trencsin. xiii, pp. 43–46.—BECKER, Sarepta (44).

*Coleoptera*. Denmark, LOVENDAL, Ent. Medd. iii, pp. 235–240.—Netherlands, EVERTS (260), and Tijdschr. Ent. xxxv, p. xii.—Belgium, BORRE, p. 228, Ann. Ent. Belg. xxxvi; L. COUCKE, t. c. p. 79; E. COUCKE (193).—Matériaux pour la faune entomologique de la province du Luxembourg, belge. *Coleoptères*, Troisième centurie. DE BORRE, Publ. inst. Luxemb. xxi, pp. 81–117.—SCHILSKY, vii, Beitrag zur Kenntniss der deutschen Käferfauna, Deutsche e. Z. 1892, pp. 193–208.—Brunswick, HELLER, Ent. Nachr. xviii, pp. 33–36.—Die Käfer von Nassau und Frankfurt. Sechster Nachtrag. JB. nass. Ver. xlv, pp. 65–82.—Göttingen, RADE, p. 367, Ent. Nachr. xviii.—Catalogue des *Coleoptères* récoltés à Aigle et environs, Bull. Soc. Murith. xix, pp. 21–60.—Switzerland,

GUILLEBEAU, *Échange*, i, No. 7, p. 3.—Simplon, BOURGEOIS, p. ccxiv, Bull. Soc. Ent. Fr. lxi.—Brunn, FLEISCHER, pp. 206, 209, & 211, Wien. ent. Z. xi.—Silesia, LETZNER (551).—Austria, EPPELSHEIM (255).—Hungary, FRIVALDSZKY (310).—Carinthia, REITTER, p. 186, Wien. ent. Z. xi, WEISE (1000).—Russia, SEMENOW (834).—Sarepta, PIC (677).

*Hymenoptera*. Belgium, LAMEERE (535).—Germany, KRIECHBAUMER (523, 524), VERHOEFF (966).—Switzerland, FREY-GESSNER (307, 308).—Russia, MORAWITZ (624).

*Lepidoptera*. Belgium, HIPPERT, pp. 451 & 480, Ann. Ent. Belg. xxxvi; SELYS, *t. c.* p. 391.—Netherlands, CAPPEL, Tijdschr. Ent. xxxv, p. xv.—Loreley, FÜCHS (313).—Die *Macrolepidopteren* der Dresdner Gegend, STEINERT, pp. 395–423, Deutsche e. Z. Lep. v.—Switzerland, RÜHL, MT. Schw. ent. Ges. viii, p. 367.—Stilfser-Joch, RÜHL (790).—Galicia, KLEMENSIEWICZ (499).—Bucovina, HORMUZAKI (414).—Tyrol, ELWES, P. E. Soc. 1892, p. xxvi.—South Tyrol, REBEL (716).—Carinthia, HONRATH (413).

*Diptera*. KIEFFER (492, 493, 494), MEADE (596), MIK (609), STROBL (902).—Belgium, L. COUCKE, Ann. Ent. Belg. xxxvi, pp. 134–139.—Hertogenwald, E. & L. COUCKE, Ann. Ent. Belg. xxxvi, pp. 462–469.—Switzerland, BECKER (45), BERGROTH (61), RÖDER, Wien. ent. Z. xi, p. 170.—Germany, LIEBEL (562), RÜBSAAMEN (786), STEIN (896).—Austria, STROBL (903, 905, 906).—Thuringia, RÖDER, Ent. Nachr. xviii, p. 204.

*Rhynchota*. Belgium, FOKKER, Ann. Ent. Belg. xxxvi, p. 170; *Énumération des Hémiptères de Belgique*. II. *Homoptera*: COUBEAUX, Ann. Ent. Belg. xxxvi, pp. 34–36, & 80–83.—Catalogus der in Nederland voorkomende *Hemiptera*: Addenda et corrigenda, FOKKER, pp. 357–378, Tijdschr. Ent. xxxiv.—Lorraine, KIEFFER, Ent. Nach. xviii, p. 30.—Hungary, LETHIERRY (549).—Pressburg, SABRAUSKY, Verh. Ver. Pressburg (n.s.) vii, pp. 16–24.—DUDA, Schnabelkerfe Böhmens, cf. Wien. ent. Z. xi, p. 250.—St. Petersburg, CHOLODKOVSKY (172).

*Neuroptera*. Schwarzwald, McLACHLAN, Ent. M. M. xxviii, p. 79.—Germany, ROSTOCK (781).

(f.) *France* [see also (a.) (b.) and (g.)].

*Insecta*. Aude, Liste des espèces de *Diptères*, *Hémiptères* et *Hymenoptères* recueillies dans le département et principalement aux environs de Carcassonne, GAVOY, Bull. Soc. Aude, iii, pp. 255–298.—Auvergne, DESBROCHERS, Frelon, i, pp. 2–10.—Ria, XAMBEU, Soc. Agricole Pyrén.-orient. xxxiii, pp. 229–240.

*Coleoptera*. ABEILLE (1), BRISOUT (128), CHABAUT (169), and Bull. Soc. Ent. Fr. lxi, p. cccxiv; CROISSANDEAU (194), and p. ccviii, Bull. Soc. Ent. Fr. lxi; GRILAT (365); GUILLEBEAU (375, 376, 377); and Catalogue des *Coléoptères* du département de l'Ain, *Échange*, No. 54, &c., &c.; JACQUET, *Échange*, i, No. 6, p. 3; REY (736); Somme, COLIN, Bull.



Soc. L. Nord. France, x, pp. 212-216, and DELABY, *t. c.* pp. 308-314 ; Seine-inf., ÉTIENNE, Bull. Soc. d'Elbeuf, p. 61 ; Catalogue des *Coléoptères* du Finistère (completed), HERVÉ, Bull. Soc. Finistère, xii, pp. 81-127 ; Supplement, pp. 129-132 ; Soulac, GOUIN, Act. Soc. L. Bord. v, p. clxi.

*Hymenoptera.* *Hyménoptères* de la Vendée, BLAND, Rev. Sci. Nat. Ouest, pp. 141-149.

*Lepidoptera.* CHRÉTIEN (174), CONSTANT (182), RAGONOT, p. clxiii, Bull. Soc. Ent. Fr. lxi ; Calvados, DUMANS, p. lxxii, Bull. Soc. Ent. Fr. lxi.—Elbeuf, DUPONT, Bull. Soc. d'Elbeuf, 1891, p. 43.—Alpes maritimes, BROMILOW, Ent. xxv, p. 245.—Contribution à la faune des *Lépidoptères* du sud-ouest de la France : Supplément aux Catalogues de M.M Roger et Trimoulet, et Catalogue provisoire des *Pyrales* des environs de Bordeaux, BREIQUET, BROWN, Act. Soc. L. Bord. xlv, pp. 49-91.

*Rhynchota.* HORVATH (431), PUTON, Échange, 1890, No. 62, p. 110, and Rev. d'Ent. xi, pp. 31 & 32.—Catalogue des *Hémiptères*, (*Hétéroptères*, *Homoptères*, *Psyllides*) recueillis dans le département de la Loire-inférieure, DOMINIQUE, Bull. Soc. Sci. Nat. Ouest. France, 1892, pp. 81-130.—Matériaux pour la faune des *Hémiptères* de l'Oise, CARPENTIER & DUBOIS, Mém. Soc. L. N. Fr. viii, pp. 406-440.

*Neuroptera.* MARTIN (587, 588, 589).

*Orthoptera.* FINOT (282) ; Matériaux pour le Catalogue des *Orthoptères* de la Somme, Bull. Soc. L. N. Fr. x, pp. 69-75.—Loire-inf., DOMINIQUE, pp. 146-148.

(g.) *Southern Europe and Mediterranean Basin* [see also (a.) and (b.)].

*Insecta.* Val Vigezzo, CARLINI, Bull. Ent. Ital. xxiv, pp. 83-91.—I. of Lampedusa, RAGUSA, Nat. Sicil. xi, pp. 234-238.

*Coleoptera.* ABEILLE (2), CHAMPION (163), LEWIS (557), PIC (678, 684, 687), ZOUFAL (1026).—Spain, GUILLEBEAU (378), REITTER, p. 239, Wien. ent. Z. xi.—Italy, DODERO (219), GESTRO (332).—Val Pesio, GANGLBAUER (318).—Corsica, CROISSANDEAU (194), GUILLEBEAU (379).—I. of Capri, BLUM, Nachrichtsbl. deutsche Malak. Z. 1892, pp. 27 & 28.—Sicily, BAUDI (43), STIERLIN (898).—Syria and Cyprus, AREILLE (1).—Bosnia, PIC (690).—S. E. Europe, REITTER (729).—Herzegovina, KNOTEK (500), GANGLBAUER (317).—Persia, HEYDEN, Deutsche e. Z. 1892, p. 111 ; BEDEL (48).—Algeria, GRILAT (364), GUILLEBEAU (374), LEWIS (560), PIC (680, 681, 686, 689, 691).—Egypt, PIC (685).—Asia Minor, FLEISCHER (284), PIC (679), THÉRY (922).—Syria, FAIRMAIRE (263), PIC (683, 688).

*Hymenoptera.* EMERY (250), FOREL (291), SAUSSURE (793), VACHAL (959).—Spain, MEDINA (598).—Andalusia, MEDINA, Act. Soc. Esp. xxi, pp. 145-148. — Sardinia, KRIECHBAUMER (526).—Italy, BENZI (55), COBELLI (176).—Trieste, GRÄFFE (358).—Dalmatia, GASPERINI (320), VERHOEFF (969).—Bulgaria, FOREL (289), SCHULTHESS-RECHBERG (803).—Algeria, LESNE (548).—Aden, FOREL (290).

*Lepidoptera*. ZAPATER, Catálogo de los Lepidópteros de la provincia de Teruel, Ann. Soc. Esp. xxi, pp. 103-159.—S. France, NICHOLSON, Ent. M. M. xxviii, p. 270.—N. Italy, NORRIS, Ent. xxv, p. 239, &c.—Modena, POZZI, Note Lepidotterologiche, Atti Soc. Mod. (3) xi, pp. 1-11.—Sardinia, MABILLE (572).—Sicily, PÜNGELER (706).—Roumania, JOANNIS, Bull. Soc. Ent. Fr. lxi, pp. ccxxxix-ccxli; COSMOVICI (191).—Bucharest, MONTANDON, Bull. Soc. Ent. Fr. lxi, p. xlvi.—Tunis, RAGONOT (711); STAUDINGER (890).—Aden, BUTLER (145); YERRURY (1025).

*Diptera*. PAVIA, BEZZI (79).

*Rhynchota*. Italy, Su alcuni Emitteri Eterotteri del Modenese, TESTI, Atti Soc. Mod. (3) xi, pp. 203-212. FERRARI (281).—Croatia, HORVATH, Glasnik Naravosl. Druzt. vi, pp. 29-49.—Algeria, MONTANDON (618).—Sahara, COCCIDEA, TARGIONI-TOZZETTI (912, 913); GIARD, Bull. Soc. Ent. Fr. lxi, p. cclxxiii.—Egypt, PUTON, Rev. d'Ent. xi, pp. 32-34.—Syria, PUTON (708).

*Neuroptera*. Contribuzione allo studio dei *Pseudoneurotteri* del Modenese, BENTIVOGLIO, Atti Soc. Mod. (3) xi, pp. 122-124.—NOVAK, Terzo cenno (*Neuropt.* and *Orthopt.*) sulla Fauna dell' Isola Lesina in Dalmazia, Glasnik Naravosl. Druzt. vi, pp. 50-58.

*Orthoptera*. Locusts near Florence, Bull. Ent. Ital. xxiv, pp. 164-169.—Trentino, COBELLI, Verh.-z.-b. Wien, xlii, p. 61.—NOVAK, Secondo cenno sulla Fauna dell' Isola Lesina in Dalmazia, Glasnik Naravosl. Druzt. v, pp. 119-128.—Bulgaria, FREY-GESSNER, MT. Schw. ent. Ges. viii, pp. 397-403.—N. Africa, KRAUSS (520).—Oran, OLIVIER, Bull. Soc. Ent. Fr. lxi, p. xlv.

#### (h.) *Caucasus and West and Central Asia*

[see also (a.) and (b.).]

*Coleoptera*. Caucasus, REITTER (727); ROST (780); WEISE (999).—W. Asia, BRENSKE (125); FAIRMAIRE (268, 271); FAUST (274); JACOBSON (445); PROCHAZKA (705); REITTER (725, 726, 728); SCHMIDT (801); SEMENOW (831, 832, 833); WEISE (992).—Turkestan, EPPELSHEIM (256); HEYDEN (402); WEISE (994).

*Lepidoptera*. W. Asia, ALPHERAKY (4).—Centr. Asia, GRAESER (357).

*Rhynchota*. W. Asia, HORVATH (429).

#### 4. AFRICA (ETHIOPIAN REGION).

*Insecta*. DISTANT (210, 216).

*Rhynchota* and *Lepidoptera*. KARSCH (460).

*Coleoptera*. ALLUAUD (8); BRENSKE (122); DESBROCHERS (200); DUVIVIER (230, 231); FAIRMAIRE (262); GESTRO (329, 334); GORHAM (348); GORHAM & GAHAN (353); GROUVELLE (368); HORN (421, 423, 426); KERREMANS (482, 487, 488); KOLBE (502, 504, 505, 506, 507, 508); KRAATZ (514); LAMEERE (534); LEFÈVRE (543); LEWIS (558); NON-

FRIED (642, 648); PÉRINGUEY (672, 673); ROELOFS (774, 775); SCHMIDT (801, 802); SENNA (838); WASMANN (935); WEISE (993, 997, 998).

*Hymenoptera.* ANDRÉ (12); EMERY (252, 253); FOREL (290, 292); HANDLIRSCH (386); KELLER (475); KOHL (501); MAGRETTI (575); SAUSSURE (793); STADELMANN (883); VACHAL (960).

*Lepidoptera.* AURIVILLIUS (24); BUTLER (143); BUTLER & ROTHCHILD (147); HOLLAND (403, 407, 408); HONRATH (412); KARSCH (461, 462, 463, 464); KIRBY (497); MABILLE (571); MABILLE & VUILLOT (573); PAGENSTECHE (668); ROBBE (766); ROGENHOFER (778); SMITH & KIRBY (858); STAUDINGER (885, 888, 889); VUILLOT (978, 979, 980); WARREN (983); WEYMER (1003).

*Diptera.* BEZZI (80); BIGOT (85); BRAUER (116); BRAUER & BERGENSTAMM (119).

*Rhynchota.* BERGROTH (62, 68); CARLINI (158); DISTANT (210, 213, 218); GERSTAECKER (323); KARSCH (465); MONTANDON (618, 619, 620); REUTER (732).

*Neuroptera.* CALVERT (150); KARSCH (468); SELYS (825); KARSCH (469, 470, 471, 472); PICTET & SAUSSURE (692); REDTENBACHER (717).

## 5. MADAGASCAR.

*Insecta.* NOSSIBÉ, BRANCSIK (115).

*Coleoptera.* FAIRMAIRE (266, 267, 269).—Seychelles, FAIRMAIRE (270); HORN (421); JACOBY (447); KRAATZ (513, 517); LEWIS (555); NONFRIED (642, 648); ROELOFS (774).

*Hymenoptera.* FOREL (287); HANDLIRSCH (387); KOHL (501); SAUSSURE (793).

*Lepidoptera.* BUTLER (146); SMITH & KIRBY (858); WARREN (983).

*Rhynchota.* BERGROTH (72); DISTANT (214, 218); MONTANDON (619); REUTER (733).

*Neuroptera.* SELYS (825); Seychelles, CALVERT (150).

## 6. TROPICAL AND EASTERN ASIA WITH JAPAN.

For Aden (*Hymenoptera* and *Lepidoptera*) see 3 (g.).

*Insecta.* SEITZ (820); *id.*, China (821); *id.*, Japan (822, 823).

*Coleoptera.* ALLARD (7); AURIVILLIUS (25); BATES (37, 38); BEDEL (47); BELON (53); BERGÉ, pp. 239–241, Ann. Ent. Belg. xxxvi; BOURGEOIS (113); BRENSKE (122, 123, 125); BRONGNIART (133); CANDÈZE (152, 155); DESBROCHERS (200); DUVIVIER (232); FAIRMAIRE (267); FAUST (276); FRIVALDSZKY, China (309); GESTRO (324, 325, 326, 327, 328, 329, 330, 333); GORHAM (349, 351); GROUVELLE (367, 369, 370); GUILLEBEAU (378); HORN (421, 422, 424); JACOBY (446, 448); JANSON (454); KERREMANS (484, 489); KOLBE (506); KRAATZ (514, 516); LEFÈVRE (544); LESNE (517); LEWIS (553, 555, 558, 561); *id.*, Japan (554, 556); NONFRIED (642, 644, 647); OLIVIER (652); POLL (696);

RÉGIMBART (720, 723); RITSEMA (757); SCHMIDT (801); SCHENFELDT, *Ann. Ent. Belg.* xxxvi, pp. 107-111; SENNA (838, 839); SHARP (843); VILLARD, Japan (976); WEISE (997, 1001).

*Hymenoptera.* ANDRÉ (12); CAMERON (151); FOREL (290); FOREL, Ceylon (288, p. 17, 293); HANDLIRSCH (386); JAKOWLEW (453); KOHL (501); MAGRETTI (576); MOCSÁRY, China and Tibet (615); ROTHNEY, *E. India ants*, *P. E. Soc.* 1892, pp. viii-x; SAUSSURE (793); WROUGHTON, *Ants of India* (1018).

*Lepidoptera.* AUSTAUT, Japan (29); BUTLER, Ceylon (142); ELWES (248); HAMPSON, *Moths of India*, vol. i (384); LEECH (542); MANDERS (579); MOORE (622, 623); NICÉVILLE (638); OBERTHUR (650, 651); POJUADÉ (702); ROBBE (765); ROMANOFF, China and Mongolia (779); SEITZ (817, 818, 820, 821); SONTTHONNAX (878); PEKIN, STAUDINGER, *Deutsche e. Z. Lep.* iv, p. 339; India, SWINHÖE (908, 909); WARREN (983).

*Diptera.* BIGOT (83, 84, 85, 86, 87); BRAUER & BERGENSTAMM (119).

*Rhynchota.* BERGROTH (63, 66, 67, 70, 71); DISTANT (211, 212, 213, 217); HORVATH, *Trop. Asia and Tibet* (428); LETHIERRY (550); MASKELL, *Coccidæ* (500); MONTANDON (617, 618, 619, 620); REUTER, *E. Siberia and Mongolia* (730).

*Neuroptera.* EATON (241, 242); *id.*, Japan (243); KARSCH, China (467); SELYS (824).<sup>9</sup>

*Orthoptera.* BRUNNER, Ceylon (137); PICTET & SAUSSURE (692).

## 7. ASIATIC ARCHIPELAGO, INCLUDING PAPUA.

*Coleoptera.* BOURGEOIS (112); BORNEO, BOURGEOIS (114); BRENSKE (122, 123); CANDÈZE (156); *id.*, Engano (153); *id.*, New Guinea (154); DESBROCHERS (200); DOHRN, Philippines (221); FAIRMAIRE, Sumatra (265); FAUST (278); GESTRO (327, 329); *id.*, Engano (335); *id.*, New Guinea (331), and *Ann. Mus. Genov.* (2) x, pp. 265-268; GORHAM, Borneo (350); GROUVELLE (372); *id.*, Philippines (367); *id.*, Borneo (371); HELLER, Java (394); HORN (421, 424); JACOBY, Sumatra (448); JANSON (454); KERREMANS, Philippines (483); *id.*, Engano (485); *id.*, New Guinea (486); KOLBE (506); KRAATZ (514, 516); *id.*, Java (515); LEWIS (555); *id.*, Borneo (558); NONFRIED (642, 644); OLIVIER, New Guinea (653); RAFFRAY, Philippines (710); RÉGIMBART (721); *id.*, Borneo (722); RITSEMA (763, 764), and *Notes Leyd. Mus.* xiv, pp. 139, 143, & 144; *id.*, Java (759, 762); *id.*, Java and Nias I. (758); *id.*, Borneo (761); *id.*, Amboyna (760); ROELOFS, Borneo (772); *id.*, Aru Is. (776); SCHMIDT (801); SENNA, Java (837); SHARP, Java (844); TRYON, New Guinea (953); WATERHOUSE, Damma I. (988); WEISE (997); *id.*, Celebes (998).

*Hymenoptera.* ANDRÉ, Borneo (13); HANDLIRSCH (386); KOHL (501); STADELMANN (883).

*Lepidoptera.* BUTLER, Borneo (141); HAGEN, Banka (383); HEYLAERTS (403); HONRATH (412); MOORE (623); NICÉVILLE (638);

PAGENSTECHER (668); RIPPON, ARU IS. (756); RÖBER (767); ROGENHOFER, Sumatra (778); ROTHSCHILD, Celebes (783), and ROTHSCHILD, P. E. Soc. 1892, p. xv; SEMPER, Philippines (835); SMITH, Borneo (857); SNELLEN, Flores (869); *id.*, Java (872, 876); *id.*, Celebes (870); STAUDINGER, Borneo (892, 894); *id.*, Mindoro (888); SWINHÖE (908); TRYON, New Guinea (954); WARREN (983).

*Diptera.* BIGOT (85); BRAUER & BERGENSTAMM (119); RÖDER (771); WULF, Java (1019).

*Rhynchota.* BERGROTH (63); *id.*, Engano (66); DISTANT (212, 213); *id.*, Borneo (211); *id.*, Timor (215); TRYON, New Guinea (952).

*Neuroptera.* KARSCH, Java (466); SELYS (824).

*Orthoptera.* BOLIVAR (710); DOHRN (222); PICTET & SAUSSURE (692); REDTENBACHER (717).

## 8. AUSTRALIA AND TASMANIA.

*Insecta.* Tasmania, WALKER, Ent. M. M. xxviii, p. 153; Notes from Fremantle, &c., *id.* t. c. p. 55.

*Coleoptera.* BEDEL (47); *Scymnus lophanthæ* said to be Australian, Ent. News, iii, p. 144, note; BLACKBURN (90, 91, 92, 93, 94, 95); FAUST (277); LEWIS (555); NONFRIED (644); OLLIFF (655); POLL (697); ROELOFS (776); SCHMIDT (801); SHARP (843); SLOANE (852, 853).

*Hymenoptera.* FROGGATT (311, 312); HANDLIRSCH (386); KOHL (501); ROTHNEY, P. E. Soc. 1892, p. iii; SAUSSURE (793).

*Lepidoptera.* LOWER (565, 566); LUCAS (568, 569); MEYRICK (604); MISKIN (611, 612, 613); OLLIFF (654); a list of Victorian *Rhopalocera*, SPRY & ANDERSON, Vict. Nat. ix, pp. 121-123; SWINHÖE (908).

*Diptera.* BIGOT (83, 85); BRAUER & BERGENSTAMM (119); RÖDER (771).

*Rhynchota.* MURRAY I. and MABUIAG, CARPENTER (159); DISTANT (212, 213, 214, 217); MASKELL (590, 592).

*Orthoptera.* REDTENBACHER (717); SAUSSURE (795); TEPPER (916, 917).

## 9. NORTH AMERICA.

*Insecta.* GODMAN & SALVIN (347); JAMESBURG, Ent. News, iii, p. 36.—Catalina I., SEAVEY, Zoe, iii, pp. 262 & 263.—New Mexico, TOWNSEND (941).—Mississippi Bottoms, WEED, Canad. Ent. xxiv, pp. 276-279.—Alaska, WICKHAM (1007).—Ottawa, numerous records by HARRINGTON and J. F. in Ottawa Natural. 1892. Insects in *Cryptoporus valvatus* in British Columbia, HUBBARD, Canad. Ent. xxiv, pp. 250-256.

*Coleoptera.* ANGELL (14); BLAISDELL, San Diego, Zoe, iii, pp. 47-49, 102, 252.—BLAISDELL (96, 97, 98); BRENDEN (120, 121); CASEY (161, 162); San Francisco, DUNN, Zoe, ii, p. 310; N. Brunswick, HARRINGTON, Canad. Ent. xxiv, p. 112; *id.* (389); HORN (416, 417, 418, 419); W. HORN (421); SCHWARZ (805); WICKHAM (1009),

*id.*, Bull. Lab. Iowa, ii, p. 234; *id.*, Alaska (1006); *id.*, Iowa, Canad. Ent. xxiv, pp. 99-101.

*Hymenoptera*. ASHMEAD (17, 18, 19, 20, 21, 22); BRODIE (129); FOX (298 to 306), and Ent. News, iii, p. 17; FYLES (314); GILLETTE (314); HANDLIRSCH (386); HARRINGTON (388); HOWARD (433, 435); KOHL (501); PATTON (670); ROBERTSON (768).

*Lepidoptera*. Catalogue, SMITH (859).—DYAR (238, 239, 240); EDWARDS (246, 247); FERNALD (280); HULST (441); KELLICOTT (477); NEUMOEGEN (633, 634); NOLAN (641); PAGENSTECHER (668); RILEY (744); SKINNER (847, 848, 849); SLOSSON (854, 855); SMITH (860, 861, 863, 867); WARREN (983); WRIGHT (1017).—Ohio, KELLICOTT, Canad. Ent. xxiv, p. 42.—Adirondack, MCKNIGHT, Ent. News, iii, pp. 87-89.—N. Carolina, MEAD, Canad. Ent. xxiv, p. 313; MOFFAT, Canad. Ent. xxiv, pp. 18 & 132.—Alaska, WRIGHT, Ent. News, iii, p. 74.—A list of the Butterflies found at Marshall, Missouri, and vicinity, STALEY, Canad. Ent. xxiv, pp. 201-204.—Colorado, BRUCE, Ent. News, iii, p. 136, and COCKERELL, p. 192, Canad. Ent. xxiv.—Notes on some of the Butterflies of the Yosemite Valley and adjacent region, VAN DYKE, Zoe, iii, pp. 237-241.—Pennsylvania, EHRLMAN, Ent. News, iii, p. 163.

*Diptera*. ALDRICH (5, 6); BIGOT (83, 85); BRAUER & BERGENSTAMM (119); COQUILLETT (185, 186, 187, 188, 189, 190); HOOD, Psyche, vi pp. 283 & 284; SNOW (877); TOWNSEND (931, 933, 934, 935, 936, 937, 938, 939, 940, 942, 943), and Psyche, p. 220; WILLISTON (1011).

*Rhynchota*. BERGROTH (64); DUZEE (233, 234, 235, 236, 237); GODING (345, 346).—Fauna ottawaensis. *Hemiptera*, Ottawa Natural. pp. 25-32.

*Neuroptera*. BANKS, Catalogue (33); Canada, MOFFAT, Canad. Ent. xxiv, p. 11.—*Odonata* of Maine, WADSWORTH, Ent. News, iii, p. 8, and HARVEY, t. c. pp. 92 & 116.

*Thysanura*. HARVEY (390, 391).

*Orthoptera*. BLATCHLEY (104, 105); SCUDDER (816).

## 10. CENTRAL AMERICA, INCLUDING MEXICO.

*Insecta*. GODMAN & SALVIN (347).

*Coleoptera*. BATES (36); CASEY (162); FAUST (273); GAHAN (315); HORN (426); KRAATZ (518); LEWIS (559); NEVINSON (635); NON-FRIED (642-645).

*Hymenoptera*. HANDLIRSCH (386); KOHL (501); SAUSSURE (793).

*Lepidoptera*. DRUCE (226); PAGENSTECHER (668); RILEY (750); SCHAUS (798, 799); THIERRY-MIEG (923).

*Diptera*. BIGOT (83, 85); BRAUER & BERGENSTAMM (119); GIGLIOTOS (342); MIK (606); TOWNSEND (938).

*Rhynchota*. BERGROTH (65); DISTANT (214); DUGÈS (229),

*Orthoptera*. PICTET & SAUSSURE (692); SAUSSURE (794).

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## 11. ANTILLES.

*Insecta.* Jamaica, COCKERELL (179), and J. Inst. Jamaica, i, pp. 71-74.  
—Grenada, Rep. Brit. Ass. 1892, pp. 353 & 354.

*Coleoptera.* FAUST (273).

*Hymenoptera.* Jamaica, ANDRÉ (12); Jamaica, FOX, Ent. News, iii, p. 226; Cuba, ASHMEAD (19).

*Lepidoptera.* PAGENSTECHER (668); St. Lucia, SCHAUS (798) p. 10; WEIR, J. Inst. Jamaica, i, p. 106.—Bahamas, see N. America.

*Diptera.* Haiti, BIGOT (83, 85); BRAUER & BERGENSTAMM (119).—Jamaica, COCKERELL (180); TOWNSEND (931, 932, 946, 947).

*Rhynchota.* Jamaica, JOHNSON & FOX, Ent. News, iii, p. 59.

*Orthoptera.* St. Vincent, BRUNNER & REDTENBACHER (138).

## 12. SOUTH AMERICA.

*Insecta.* GODMAN & SALVIN (347); MEINERT (599).

*Coleoptera.* BEDEL (47); BERG (57); DESBROCHERS (206); FAIRMAIRE (261, 264); FAUST (273, 275, and 278, p. 203); FLEUTIAUX (285); GAHAN (316); GERMAIN, Chili (322); GROUVELLE (366); HORN (421, 425); LÉVEILLÉ (552); NEVINSON (635); RUGE (788); SENNA, Chili (838).

*Hymenoptera.* ANDRÉ (12); BUYSSON & MARSHALL (149); FOREL (290, 295); HANDLIRSCH (386); KOHL (501); SAUSSURE (793); STADELMANN (883).

*Lepidoptera.* BUTLER (145); DOGNIN (220); DRUCE (225); KIRBY (497); OBERTHUR (650); PAGENSTECHER (667, 668); SCHAUS (798, 799); SMITH & KIRBY (858); STAUDINGER (893); THIERRY-MIEG (923); VUILLOT (980); WARREN (983); Brief aus Bolivien, GARLEPP, Deutsche e. Z. Lep. v, pp. 272-276.

*Diptera.* ARRIBALZAGA (15); BIGOT (83, 85, 87); BRAUER & BERGENSTAMM (119); MIK (606); OSTEN-SACKEN (663); RÖDER (769); WILLISTON (1010); WULF (1019).

*Rhynchota.* BERG (56); BERGROTH (65); DISTANT (213, 214); DOUGLAS, Coccids (224); MORGAN (625); REUTER (731).

*Orthoptera.* REDTENBACHER (717).

## PALÆO-ENTOMOLOGY.

[Cf. EMERY (249), MEUNIER (602), MOBERG (614), SCHÄFF (797), SCHLECHTENDAL (800), SCUDDER (814).]

## COLEOPTERA.

*Coleoptera* in peat; SCHÄFF (797).

Remarks on, with summary of, the N. American Tertiary *Rhynchophorous* fauna; SCUDDER (814).

## HYMENOPTERA.

*Ectutomma gracile*, Sicilian amber; EMERY, p. 145, pl. i, figs. 1 & 2, Mem. Acc. Bologn. (5) i, n. sp.

*Ponera* ? *leptocephala*, Sicilian amber; EMERY, p. 146, pl. i, figs. 3 & 4, Mem. Acc. Bologn. (5) i, n. sp.

*Cataulacus silvestrii*, p. 147, pl. i, figs. 5-7, *planiceps*, p. 148, figs. 8 & 9, Sicilian amber; EMERY, Mem. Acc. Bologn. (5) i, n. sp.

*Hypopomyrmex*, n. g., near *Strumigenys*, p. 148, for *H. bombicci*, n. sp., p. 149, pl. i, figs. 10 & 11; EMERY, Mem. Acc. Bologn. (5) i.

*Acrostigma*, n. subg. of *Podomyrma*, p. 149, for *P. (A.) mayri*, n. sp., Sicilian amber, p. 150, pl. ii, figs. 12-16; EMERY, Mem. Acc. Bologn. (5) i.

*Æromyrma sophia*, Sicilian amber; EMERY, p. 151, pl. ii, figs. 17 & 18, Mem. Acc. Bologn. (5) i, n. sp.

*Crematogaster præcursor*, Sicilian amber; EMERY, p. 152, pl. ii, figs. 19-21, Mem. Acc. Bologn. (5) i, n. sp.

*Leptomyrmex maravignæ*, Sicilian amber; EMERY, p. 152, pl. ii, fig. 22, Mem. Acc. Bologn. (5) i, n. sp.

*Tapinoma minutissimum*, Sicilian amber; EMERY, p. 153, pl. iii, figs. 24 & 25, Mem. Acc. Bologn. (5) i.

*Technomyrmex deletus*, Sicilian amber; EMERY, p. 153, pl. iii, figs. 26-28, Mem. Acc. Bologn. (5) i, n. sp.

*Plagiolepis labilis*, Sicilian amber; EMERY, p. 154, pl. iii, figs. 29-32, Mem. Acc. Bologn. (5) i, n. sp.

*Gesomyrmex corniger*, Sicilian amber; EMERY, p. 155, pl. iii, figs. 33-35, Mem. Acc. Bologn. (5) i, n. sp.

*Ecophylla sicula*, Sicilian amber; EMERY, p. 156, pl. iii, figs. 36 & 37, Mem. Acc. Bologn. (5) i, n. sp.

## DIPTERA.

*Leptidæ* in amber; MEUNIER, p. lxxxiii, Bull. Soc. Ent. Fr. lxi (provisional new genus, *Palæochrysopila*).

*Dolichopodidæ* found in amber, notes on; MEUNIER (602).

## RHYNCHOTA.

*Protocimex siluricus*, Silurian of Sweden; MOBERG, Geol. Fören. Stockholm Förh. xiv, p. 121, n. sp.

*Notonecta*, note on fossil; SCHLECHTENDAL (800).

## IV.—ECONOMIC.

Reports: LINTNER (564); ORMEROD (656).—Report on the position of economic entomology in Europe; Bos, Tijdschr. Ent. xxxv, pp. xlvii-lxviii: on the ravages of *Xyleborus perforans* in the West Indies; BLANDFORD (100).—Insects injurious to *Conifera* in Britain; BLANDFORD (99).—Various notes on injurious insects in Rep. E. Soc. Ent. xxiii,



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- Brachichila rugulipennis*, Burma, BATES, p. 406, Ann. Mus. Genov. xii, n. sp.
- Brachinus nobilis*, Dej., = (*Pheropsophus alstoni*, Per.) ; PÉR p. 135, Tr. S. African Phil. Soc. vi (2).
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- Brachyonychus lævipennis*, n. var. *parumpunctatus* ; BATES, p. 29, Ann. Mus. Genov. (2) xii.
- Broscini* : notes, taxonomic, synonymic, and critical, on *At* genera and species ; SLOANE, P. Linn. Soc. N.S.W. (2) 45-64.
- Culleida sultana*, p. 421, *excelsa*, *doriae*, p. 422, Burma, BATES, Ann. Mus. Genov. (2) xii, n. spp.
- Carabus cebennicus*, n. n. for *hispanus*, auct., nec Fab. ; *C. hispani* = (*rutilans*, auct.) ; VUILLEFROY, p. 320, Ann. Soc. Ent. xiii. *C. hispanus*, n. var. *boudeti* ; BEUTHIN, p. 211, Ent. xvi.
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- Euryaptus*, n. g., near *Trigonotoma*, for *E. nigellus*, Burma, *assamensis*, Assam, *rufipes*, Andaman Is., p. 356, n. spp.; BATES Mus. Genov. (2) xii.
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- Taridius birmanicus*, Burma, BATES, p. 416, *Ann. Mus. Genov.* n. sp.
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- Trigonognatha feana*, Burma, BATES, p. 365, *Ann. Mus. Genov.* n. sp.
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#### AMPHIZOIDÆ, HALIPLIDÆ, DYTISCIDÆ.

- [*Cf.* HUBBARD (437, 438), RÉGIMBART (720, 721, 722, 723).]  
*Amphizoa lecontei*, imago figured, larva fig., and description  
 HUBBARD, *Ins. Life*, v, pp. 19-22 : larva described and  
 HUBBARD, *P. E. Soc. Wash.* ii, pp. 341-346, pl. iii.

- Haliplus angustifrons*, Bengal, RÉGIMBART, p. 112, Ann. Ent. Belg. xxxvi; *H. signatipennis, ferruginipes*, New Guinea, RÉGIMBART, p. 979, Ann. Mus. Genov. (2) x : n. spp.
- Bidesius guttulatus*, Burma, RÉGIMBART, p. 542, Ann. Mus. Genov. (2) x; *B. lorice*, p. 989, *neoguineensis*, p. 990, New Guinea, RÉGIMBART, Ann. Mus. Genov. (2) x; *B. severini*, p. 116, *indicus*, p. 117, *consanguineus, antematus*, p. 118, *inconstans*, p. 119, *livens*, p. 120, Bengal, RÉGIMBART, Ann. Ent. Belg. xxxvi : n. spp.
- Copelatus speciosus*, n. n. for *formosus*, Rég.; RÉGIMBART, p. 991, Ann. Mus. Genov. (2) x.
- C. gestroi*, New Guinea, RÉGIMBART, p. 991, Ann. Mus. Genov. (2) x, n. sp.
- Cybister ovatus*, n. var. *congoana*, DUVIVIER, p. 272, Ann. Ent. Belg. xxxvi.
- C. hypomelas*, New Guinea, RÉGIMBART, p. 994, Ann. Mus. Genov. (2), x, n. sp.
- Dytiscus marginalis*, variation in coxal processes; GRIFFINI, Boll. Mus. Tor. vii, No. 115.
- Hydaticus epipleuricus*, Burma, RÉGIMBART, p. 545, Ann. Mus. Genov. (2) x; *H. suffusus*, p. 992, *rhantaticoides*, p. 993, New Guinea, RÉGIMBART, Ann. Mus. Genov. (2) x : n. spp.
- Hydrocoptus opatrinus*, p. 11, *bosschæ*, p. 12, Borneo, RÉGIMBART, Notes Leyd. Mus. xiv, n. spp.
- Hydrovatus pinguis*, Bengal, RÉGIMBART, p. 114, Ann. Ent. Belg. xxxvi, n. sp.
- Hyphoporus severini*, Bengal, RÉGIMBART, p. 115, Ann. Ent. Belg. xxxvi, n. sp.
- Hyphydrus lyratus*, n. var. *foveolatus*; RÉGIMBART, p. 986, Ann. Mus. Genov. (2) x.
- H. flavicans*, Bengal, RÉGIMBART, Ann. Ent. Belg. xxxvi, p. 115; *H. lorice*, p. 985, *gibbicollis*, p. 986, *curripes*, p. 987, New Guinea, RÉGIMBART, Ann. Mus. Genov. (2) x : n. spp.
- Lacconectes lividus*, Burma, RÉGIMBART, p. 544, Ann. Mus. Genov. (2) x, n. sp.
- Laccophilus parvulus*, variation noticed; RÉGIMBART, p. 113, Ann. Ent. Belg. xxxvi.
- L. birmanicus*, p. 538, *planitarsis*, p. 539, Burma, RÉGIMBART, Ann. Mus. Genov. (2) x; *L. univittatus, auriculatus*, New Guinea, RÉGIMBART, p. 981, *t. c.* : n. spp.
- Macroporus piceatus*, New Guinea, RÉGIMBART, p. 984, Ann. Mus. Genov. (2) x, n. sp.
- Neptosternus speciosus*, p. 982, *bicinctus*, p. 983, New Guinea, RÉGIMBART, Ann. Mus. Genov. (2) x, n. spp.

#### GYRINIDÆ.

[Cf. RÉGIMBART (720, 721).]

- Dineutes neoguineensis*, New Guinea, RÉGIMBART, p. 996, Ann. Mus. Genov. (2) x, n. sp.



*Gyrinus smaragdinus*, Burma, RÉGIMBART, p. 547, Ann. Mus. Geno  
x, n. sp.

*Orectochilus apicalis*, p. 548, *birmanicus*, p. 550, *cribratellus*, p.  
*villosovitatus*, p. 552, *tomentosus*, p. 553, Burma, RÉGIMBART  
n. spp.

*Porrhorrhynchus depressus*, New Guinea, RÉGIMBART, p. 996, t. c., n

### HYDROPHILIDÆ.

[Cf. BEDEL (47), FAIRMAIRE (262, 263), GUILLEBEAU (374,  
KUWERT (402), PÉRINGUEY (672, 673).]

*Berosus majusculus* and *externespinosus*, characters of; BLACK  
p. 207, Tr. R. Soc. S. Austr. xv.

*B. fuscostriatus*, p. 87, *immaculicollis*, p. 88, Obock, FAIRMAIRE  
d'Ent. xi, n. spp.

*Dibolocelus*, n. subg. of *Stethorus*; BEDEL, p. 308, Rev. d'Ent. x.  
*Eccoptometopus*, n. g., near *Ochthebius*, p. 104, for *E. sculpticollis*,  
p. 105, *proximus*, p. 106; n. spp., S. Africa; PÉRINGUEY,  
African Phil. Soc. vi (2).

*Helophorus punctato-sulcatus*, Turkestan, KUWERT, p. 102, Deut  
Z. 1892, n. sp.

*Hydræna capicola*, p. 106, *extrema*, p. 107, S. Africa, PÉRINGUEY  
African Phil. Soc. vi (2), n. spp.

*Hydrobaticus luridus* and *tristis* are one species; BLACKBURN, p.  
Linn. Soc. N.S.W. (2) vii.

*Hydrochus capensis*, Cape Colony, PÉRINGUEY, p. 104, Tr. S.  
Phil. Soc. vi (2), n. sp.

*Hydrophilus*, revision of (under the name *Stethorus*); BEDEL  
d'Ent. x, pp. 306-322 : *H. gansuensis*, characters of; SEI  
p. 163, Wien. ent. Z. xi.

*Hydrous dichromus*, Syria, FAIRMAIRE, p. 144, Ann. Ent. Belg.  
n. sp.

*Limnobiæ theryi*, Algeria, GUILLEBEAU, p. 324, Rev. d'Ent.  
(*Tricholimnobiæ grouvellei*, Spain, GUILLEBEAU, p. cxxxiii, B  
Ent. Fr. lxi : n. spp.

*Ochthebius turkestanicus*, Alai Mts., KUWERT, p. 102, Deutsch  
1892, n. sp.

*Philodrus suturalis*, note on; SHARP, Ent. M. M. xxviii, p. 1  
*maculiceps*, *lavigatus*, distinctive characters; BLACKBURN,  
Tr. R. Soc. S. Austr. xv.

*Spercheus interruptus*, Obock, FAIRMAIRE, p. 88, Rev. d'E  
*S. australis*, S. Africa, PÉRINGUEY, p. 23, Tr. S. African P  
vi (2); *S. capicola*, p. 107, *algoensis*, p. 108, S. Africa, PÉR  
Tr. S. African Phil. Soc. vi (2) : n. spp.

*Stethorus, rufo-cinctus*, Hindostan, p. 309, *cavisternum*, Tonkin,  
*indicus*, Hindostan, p. 310, *pedipalpus*, Australia, p. 312, *si*  
Guyana, p. 313, BEDEL, Rev. d'Ent. x, n. spp.

## STAPHYLINIDÆ.

[Cf. BLACKBURN (93), DOHRN (221), EPPELSHEIM (255, 256), FAIRMAIRE (262), GESTRO (334), GANGLBAUER (319), REITTER (725), SHARP (844), WASMANN (987).]

*Achenium hauseri*, Djizak, EPPELSHEIM, p. 336, Deutsche e. Z. 1892, n. sp.  
*Amphicroum adelaidæ*, S. Australia, BLACKBURN, p. 23, Tr. R. Soc. S. Austr. xv, n. sp.

*Anthobium sareptanum*, Epp., = (*starcki*, Reit.); REITTER, p. 26, Wien. ent. Z. xi.

*Atemeles pubicollis*, n. var. *foreli*; WASMANN, p. 351, Deutsche e. Z. 1892.  
*Atheta (Hydrosmecta) tenuissima*, Europe, EPPELSHEIM, p. 292, Wien. ent. Z. xi; *A. (Homalota) fluviala*, p. 322, *A. (Metazya) blanda*, p. 323, *concolor*, p. 324, *A. (Microdota) turanica*, p. 325, Turkestan, EPPELSHEIM, Deutsche e. Z. 1892 : n. spp.

*Belonuchus nullicedo*, Philippines, DOHRN, p. 74, S. E. Z. liii, n. sp.

*Bledius simulator*, p. 344, *immaturus*, p. 345, Turkestan, EPPELSHEIM, Deutsche e. Z. 1892; *B. lividipes*, Obock, FAIRMAIRE, p. 90, Rev. d'Ent. xi : n. spp.

*Boreaphilus carinthiacus*, Europe, GANGLBAUER, p. 17, Soc. Ent. vii, n. sp.  
*Conurus pubescens*, n. var. *decurtatus*; EPPELSHEIM, p. 328, Deutsche e. Z. 1892.

*Coproporus lateimpressus*, Margelan, EPPELSHEIM, p. 327, Deutsche e. Z. 1892, n. sp.

*Dilacra fleischeri*, Austria, EPPELSHEIM, p. 293, Wien. ent. Z. xi, n. sp.

*Eleusis parva*, N. S. Wales, BLACKBURN, p. 24, Tr. R. Soc. S. Austr. xv, n. sp.

*Euryusa laticollis*, habits; WASMANN, p. 350, Deutsche e. Z. 1892.

*Fulagria subænea*, Taschkent, EPPELSHEIM, p. 326, Deutsche e. Z. 1892, n. sp.

*Geodromicus*, distinctions of the sexes; EPPELSHEIM, p. 49, Soc. Ent. vii.

*Geostiba appfelbecki*, Bosnia, EPPELSHEIM, p. 289, Wien. ent. Z. xi, n. sp.

*Hyperomma abnorme*, Victoria, BLACKBURN, p. 22, Tr. R. Soc. S. Austr. xv, n. sp.

*Lathrobium (Lobathrium) cognatum*, Turcomania, EPPELSHEIM, p. 355, Deutsche e. Z. 1892, n. sp.

*Leptusa (Sipalia) bosnica*, Bosnia, EPPELSHEIM, p. 295, Wien. ent. Z. xi, n. sp.

*Liogluta montivagans*, Carpathians, EPPELSHEIM, p. 291, Wien. ent. Z. xi, n. sp.

*Liparocephalus*, referred to *Aleocharini*; CASEY, p. 711, Ann. N. York Ac. vi. *L. brevipennis* and *cordicollis*, probably one species; HAMILTON, p. 157, Canad. Ent. xxiv.

*Lomechusa strumosa*, its relations with various kinds of ants discussed; WASMANN, Biol. Centralbl. xii, pp. 584, &c.

*Medon propinquus*, n. var. *nigrinus*; EPPELSHEIM, p. 337, Deutsche e. Z. 1892.

- Microglossus lederi*, Taschkent, EPPELSHEIM, p. 321, Deutsche e. Z. n. sp.
- Mycetoporus reitteri*, Tatra Mts., EPPELSHEIM, p. 296, Wien. ent.  
*M. rubricus*, Turkestan, EPPELSHEIM, p. 329, Deutsche e. Z. n. spp.
- Myrmedonia afra*, Somaliland, GESTRO, p. 753, Ann. Mus. Genov. ( n. sp.
- Myrmæcia fussi*, habits; WASMANN, Deutsche e. Z. 1892, p. 348.
- Niphetodes apfelbecki*, Carpathians, GANGLBAUER, p. 17, Soc. E n. sp.
- Oxytelus sexualis*, p. 342, *subtilis*, p. 343, Taschkent, EPPELSHEIM, De e. Z. 1892, n. sp.
- Pæderus debilior*, Turkestan, EPPELSHEIM, p. 339, Deutsche e. Z n. sp.
- Philonthus variabilis*, Taschkent, EPPELSHEIM, p. 333, Deutsche e. Z  
*P. flavicornis*, Obock, FAIRMAIRE, p. 89, Rev. d'Ent. xi : n. sp
- Philorinum hopffgarteni*, Siebenburgen, EPPELSHEIM, p. 297, Wie Z. xi, n. sp.
- Platysthetus depravatus*, Taschkent, EPPELSHEIM, p. 341, Deutsch 1892, n. sp.
- Protinus limbatus*, metamorphoses; XAMBEU, Mœurs, ii, p. 7.
- Quedius crassus*, p. 4, *cinctus*, p. 6, metamorphoses; XAMBEU, Mœu  
*Q. capitalis*, p. 329, *novus*, p. 331, Turkestan, EPPELSHEIM, Deutsch 1892; *Q. pictipennis*, Victoria, BLACKBURN, p. 21, Tr. R. S Austr. xv : n. spp.
- Scimbalium grandiceps*, Margelan, REITTER, p. 68, Wien. ent. n. sp.
- Scopæus similis*, Taschkent, EPPELSHEIM, p. 337, Deutsche e. Z.  
*S. alliceps*, Obock, FAIRMAIRE, p. 89, Rev. d'Ent. xi; *S. fem*  
N. S. Wales, BLACKBURN, p. 22, Tr. R. Soc. S. Austr. xv : n.
- Stenus rugifer*, Cas., = (*unastomozans*), *vezatus* = (*insularis*), *placi* (*tumicollis*), *villosus* = (*jejunos*), *milleporus* = (*sectilifer*), *dific* (*tenuis*), *nanus* = (*nanulus*), *humilis*, Er., = (*mammops*), *rigi* (*ageus*), *brumalis* = (*pauperculus*), *gratiosus* = (*hirsutus*), Grav., = (*haplus* and *indistinctus*, Cas.), *umbratilis* = (*frate pollens* = (*patens*), *reconditus* = (*propinquus*), *callosus* = (*capunctatus* = (*dilutus* and *obsoletus*), *hubbardi* = (*simiolus*), *l* = (*leviceps*, *politulus*); CASEY, Ann. N. York Ac. vi, p. 711.
- S. posticalis*, Taschkent, EPPELSHEIM, Deutsche e. Z. 1892, p n. sp.
- Tachinus laticollis*, larva described; REY, p. clxxii, Bull. Soc. Et lxi.
- Tachyporus nitidulus*, n. var. *cruz*; EPPELSHEIM, p. 328, Deutsche 1892.
- Trygæus javanicus*, Java, SHARP, p. 61, Notes Leyd. Mus. xiv, n. sp.
- Xantholinus ochripennis*, Turkestan, EPPELSHEIM, p. 334, Deutsche 1892, n. sp.

## PSELAPHIDÆ.

[Cf. BRENDÉL (120, 121), DODERO (219), GRILAT (365), GUILLEBEAU (376, 379), PIC (687), RAFFRAY (710), SHARP (843), XAMBEU (1021).]

Dimorphic males noticed; REITTER, p. 26, Wien. ent. Z. xi.

*Batriscus adnexus, oculatus*, habits; WASMANN, Deutsche e. Z. 1892, p. 350.

*Bibloporus pini*, p. clxxxiii, *ultimus*, p. clxxxiv, Corsica, GUILLEBEAU, Bull. Soc. Ent. Fr. lxi, n. spp.

*Bythinus carinula*, Lyons, REY, Échange, No. 42, 1888, p. 4, n. sp. (other doubtful n. spp. or varr. mentioned with names, *l. c.*); *B. ravouxi*, France, GRILAT, Échange, No. 58, 1889, p. 78 (but cf. *t. c.* p. 84); *B. croissandeau*, Algeria, PIC, p. cclxxii, Bull. Soc. Ent. Fr. lxi: n. spp.

*Chennium bituberculatum*, larva described; XAMBEU, p. 135, Ann. Soc. L. Lyon, xxxix.

*Eudranes*, n. g. (*Tyrini*), p. 241, for *E. carinatus*, n. sp., N. W. Australia, p. 242; SHARP, Ent. M. M. xxviii.

*Eulasinus*, n. g. (*Tyrini*), for *E. walkeri*, n. sp., Chusan; SHARP, p. 240, Ent. M. M. xxviii.

*Rhexidius trogasteroides*, p. 12, *intermedius*, p. 13, N. America, BRENDÉL, Ent. News, iii, n. spp.

*Trimium durum, costale*, p. 166, *gracile, laticolle, majus*, p. 167, N. America, BRENDÉL, Tr. Am. Ent. Soc. xix, n. spp.

*Trogaster doriae*, Busalla, DODERO, p. 666, Ann. Mus. Genov. (2) x, n. sp.

*Tychus striola*, France, GUILLEBEAU, p. 1, Supp. to Échange, No. 19, 1886.

## SCYDMENIDÆ.

*Cephennium majus*, Reitt., and *laticolle*, Aubé, distinctive characters of; REITTER, p. 137, Wien. ent. Z. xi.

*Neuraphes panormitanus*, Sicily, RAGUSA, p. 80, Nat. Sicil. xi, n. sp.

## PAUSSIDÆ.

[Cf. BLACKBURN (93), GESTRO (333), KRAATZ (513, 517), PÉRINGUEY (673), RAFFRAY (709), WASMANN (985), XAMBEU (1021).]

*Arthropterus foveipennis*, S. Australia, p. 24, *occidentalis*, W. Australia, p. 25, BLACKBURN, Tr. R. Soc. S. Austr. xv, n. spp.

*Pentaplatarthrus paussoides*, anatomy, structure of detonating organs; RAFFRAY, N. Arch. Mus. (3) iv, pp. 91-100, pl. xiii.

*Paussus faveri*, larva described; XAMBEU, p. 137, Ann. Soc. L. Lyon, xxxix.

*P. cervinus*, Madagascar, KRAATZ, Deutsche e. Z. 1892, p. 8; *P. opacus*, Madagascar, KRAATZ, *t. c.* p. 377; *P. spinicola*, Somaliland, WASMANN, p. 355, MT. Schw. ent. Ges. viii; *P. fallax*, Transvaal, PÉRINGUEY, p. 108, Tr. S. African Phil. Soc. vi, 2: n. spp.

*Pretopaussus*, n. g., p. 706, for *P. fœæ*, n. sp., Burma, p. 707; GESTRO, Ann. Mus. Genov. (2) xii.

## SILPHIDÆ.

[*Cf.* BLACKBURN (93), FAIRMAIRE (263), GUILLEBEAU (375, 377), 1 (418), PÉRINGUEY (673), XAMBEU (1021).]

*Pinodytini* and *Lyrosomini*, distinctive characters ; HORN, p. 44, Tr. Ent. Soc. xix.

*Anemadus strigosus*, habits ; WASMANN, Deutsche e. Z. 1892, p. 350.

*Calyptromerus capensis*, S. Africa, PÉRINGUEY, p. 109, Tr. S. African Soc. vi, 2, n. sp.

*Cutops fuscipes*, Men., characters noticed ; REITTER, p. 240, ent. Z. xi.

*C. hervei*, France, GUILLEBEAU, p. 116, Échange, 1891, n. sp.

*Cutopsimorphus pilosus*, larva ; XAMBEU, p. 151, Ann. Soc. L. Lyon, x

*Choleva major*, Syria, FAIRMAIRE, p. 144, Ann. Ent. Belg. xxxvi, n.

*Colon melbournense*, Victoria, BLACKBURN, p. 25, Tr. R. Soc. S. A xv, n. sp.

*Hydnobius fulvescens*, Marseilles, GUILLEBEAU, Échange, i, No. 6, n. sp.

*Necrophorus fossor*, p. 147, *humator*, p. 150, metamorphoses ; XA Ann. Soc. L. Lyon, xxxix.

*Pinodytes hamiltoni*, *pusio*, N. America, HORN, p. 45, Tr. Am. Ent xix, n. spp.

*Ptomaphagus nigriclavus*, France, GUILLEBEAU, p. 116, Échange, (but 1892, p. 4, this is said to be *sericeus*, Panz.), n. sp.

*Silpha sinuata*, p. 139, *carinata*, p. 142, metamorphoses ; XAMBEU, Soc. L. Lyon, 1892.

## TRICHOPTERYGIDÆ.

Critical notice of Flach's synopsis and synonymy of European *Tr terygide* ; MATTHEWS, Ann. N. H. (6) ix, pp. 442-448.

*Bæocera palumboi*, Sicily, RAGUSA, p. 255, Nat. Sicil. xi, n. sp.

## HISTERIDÆ.

[*Cf.* BLACKBURN (93), BLAISDELL (96), HORN (418), LEWIS (553 555, 557, 558, 559, 560, 561), SCHMIDT (801, 802), WICKHAM (1 *Abreus mikado*, Japan, LEWIS, p. 356, Ann. N. H. (6) ix ; *A. stigma* Perak, SCHMIDT, p. 29, Ent. Nachr. xviii : n. spp.

*Acritus shogunus*, Japan, *tasmaniae*, Tasmania, LEWIS, p. 357, Ann. (6) ix, n. spp.

*Apobletes foliaceus* and *migneauxi*, synonymical note ; SCHMIDT, p Ann. Soc. Ent. Fr. lxi.

*A. nigrutilus*, Madagascar, LEWIS, Ann. N. H. (6) ix, p. 342 ; *A. a* Perak, SCHMIDT, p. 19, Ent. Nachr. xviii ; *A. nirvana*, B LEWIS, p. 20, Ann. Mus. Genov. (2) xii : n. spp.

*Carcinops karenensis*, Burma, LEWIS, p. 31, Ann. Mus. Genov. (2 *C. suavis*, Sumatra, SCHMIDT, p. 27, Ent. Nachr. xviii : n. spp.

- Cylistix asiatica*, Perak, p. 343, *orientalis*, Siam, LEWIS, Ann. N. H. (6) ix, n. spp.
- Dendrophilus californicus*, California, HORN, p. 46, Tr. Am. Ent. Soc. xix, n. sp.
- Eblisia cavipyga*, Burma, LEWIS, Ent. M. M. xxviii, p. 102; *E. monticola*, Burma, LEWIS, p. 19, Ann. Mus. Genov. (2) xii : n. spp.
- Epiechnus* : characters of; LEWIS, Ann. N. H. (6) x, p. 23, pl. xix, figs. 8-10.
- E. taprobanæ*, Ceylon, p. 355, *birmanus*, Burma, p. 356, LEWIS, Ann. N. H. (6) ix, n. spp.
- Epierus nemoralis*, Assam, LEWIS, p. 347, Ann. N. H. (6) ix; *E. amandus*, p. 25, *monticola*, p. 26, Java, SCHMIDT, Ent. Nachr. xviii : n. spp.
- Eretmotus* : habits of, and notes on specific characters; LEWIS, Ann. N. H. (6) x, pp. 233-236, pl. xix, figs. 1-7. *E. lepriouri*, Mars., = (*approximans*, Fairm.) ; LEWIS, p. 350, Ann. N. H. (6) ix.
- E. corpulentus*, *cirtensis*, p. 233, *kabylicæ*, p. 234, *bedeli*, p. 235, LEWIS, *op. cit.* (6) x, n. spp.
- Helærius hornii*, Wyoming, WICKHAM, Psyche, vi, p. 322, n. sp.
- Hister tropiccola*, Guinea, p. 23, *punctipennis*, Sierra Leone, *oblongulus*, Turkestan, p. 24, SCHMIDT, Ent. Nachr. xviii; *H. robusticollis*, Natal, p. 104, LEWIS, Ent. M. M. xxviii; *H. pransus*, p. 24, *gentilis*, p. 25, *stenocephalus*, p. 26, *sinuaticollis*, p. 27, *fragosus*, p. 28, *dentipes*, p. 29, *ixion*, p. 30, *striatipennis*, p. 31, Burma, LEWIS, Ann. Mus. Genov. (2) xii; *H. rugistrius*, Bengal, *fumulus*, Sumatra, LEWIS, p. 346, Ann. N. H. (6) ix : n. spp.
- Hololepta dilatata*, *H. (Lioderma) pinguis*, Gaboon, SCHMIDT, p. 17, Ent. Nachr. xviii; *H. fææ*, Burma, LEWIS, p. 17, Ann. Mus. Genov. (2) xii; *H. pervalida*, California, BLAISDELL, p. 337, Zœe, iii : n. spp.
- Idister gestroi*, Burma, LEWIS, p. 18, Ann. Mus. Genov. (2) xii, n. sp.
- Liopygus fumelicus*, Burma, LEWIS, p. 21, Ann. Mus. Genov. (2) xii, n. sp.
- Notodoma solstitiale*, Perak, p. 348, *rufulum*, Borneo, p. 349, LEWIS, Ann. N. H. (6) ix, n. spp.
- Onthophilus tuberculatus*, p. 353, *sculptilis*, p. 354, Burma, LEWIS, Ann. N. H. (6) ix; *O. julii*, Mexico, LEWIS, p. 124, Ent. M. M. xxviii : n. spp.
- Pachycrærus ritsemæ*, Mars., = (*P. violaceipennis*, Lew.) ; LEWIS, p. 345, Ann. N. H. (6) ix.
- Paratropus severini*, Bengal, LEWIS, p. 142, Ann. Ent. Belg. xxxvi, n. sp.
- Paromalus complanatus*, Panz., = (*Platysoma theryanum*, Reitt.) ; REITTER, p. 188, Wien. ent. Z. xi.
- P. mendicus*, *riaticus*, p. 33, *fujisanus*, p. 34, *vernalis*, *tardipes*, p. 35, *omineus*, p. 36, *montivagus*, p. 37, Japan, LEWIS, Ann. N. H. (6) ix; *P. indicus*, p. 32, *vermiculatus*, *brevipes*, p. 33, *submetallicus*, p. 34, Burma, LEWIS, Ann. Mus. Genov. (2) xii; *P. ludovici*, N. S. Wales, BLACKBURN, p. 26, Tr. R. Soc. S. Austr. xv : n. spp.
- Platylister*, n. g., type *Platysoma ovatum*, Er.; LEWIS, Ent. M. M. xxviii, p. 103.

- Platysoma solivagum*, Burma, LEWIS, p. 21, Ann. Mus. Genov. (2)  
*P. jejunum*, Perak, LEWIS, p. 343, Ann. N. H. (6) ix  
*striatisternum*, Borneo, LEWIS, p. 103, Ent. M. M. xxviii  
*distinctum*, Java, p. 19, *sincerum*, Perak, p. 20, *biimpressum*, Qu  
land, p. 21, *semilineatum*, *robustum*, Australia, p. 22, SCHMIDT,  
Nachr. xviii : n. spp.  
*Plasius bisinuatus*, Aru Is., SCHMIDT, p. 18, Ent. Nachr. xviii, n. sp.  
*Psiloscelis limatulus*, Assam, LEWIS, p. 345, Ann. N. H. (6) ix, n. sp.  
*Sternocelis* : structure of claws described; LEWIS, p. 263, Ent. M. M. x  
*S. riaticus*, Algeria, *id. l. c.*, n. sp.  
*Teretrius walkeri*, Tasmania, LEWIS, p. 353, Ann. N. H. (6) ix, n. sp.  
*Teretriosoma rajah*, Burma, LEWIS, p. 37, Ann. Mus. Genov. (2) xii,  
*Triballus onustus*, Zanzibar, *opimus*, Borneo, LEWIS, p. 350, Ann. l  
(6) ix; *T. cyclonotus*, *orphanus*, Burma, LEWIS, p. 35, Ann.  
Genov. (2) xii : n. spp.  
*Trypeticus crassus*, Perak, SCHMIDT, p. 28, Ent. Nachr. xviii  
*nemorivagus*, Burma, p. 351, *prædaceus*, Perak, p. 352, LEWIS,  
N. H. (6) ix : n. spp.  
*Xestipyge fryi*, Burma, LEWIS, Ann. N. H. (6) ix, n. sp.

## PHALACRIDÆ.

- [*Cf.* BLACKBURN (93), GUILLEBEAU (373, 378), PÉRINGUEY (673).]  
Revision of the palaearctic species with fresh classification; GUILLE  
Rev. d'Ent. xi, p. 141.  
*Eustilbus sharpi*, Syria, GUILLEBEAU, p. 191, Rev. d'Ent. xi, n. sp.  
*Grouvelleus*, n. g., for *G. prosternalis*, n. sp., Saigon, GUILLE  
p. cxxxiv, Bull. Soc. Ent. Fr. lxi.  
*Helectrus*, n. g., for *H. brisouti*, Jordan, n. sp., GUILLEBEAU, p. 187,  
d'Ent. xi.  
*Litochrus sydneyensis*, N. S. Wales, BLACKBURN, p. 26, Tr. R. Sc  
Austr. xv; *L. promontorii*, Cape Colony, PÉRINGUEY, p. 110  
S. African Phil. Soc. vi, 2 : n. spp.  
*Litochroides*, n. g., for *L. sharpi*, Djedda, p. 187, *sinuaticollis*, Ism  
p. 181, n. spp.; GUILLEBEAU, Rev. d'Ent. xi.  
*Micromerus*, n. g., for *Litochrus koltzei*, Flach, GUILLEBEAU, p. 189,  
d'Ent. xi.  
*Olibrus desbrocherei*, p. 171, *selvei*, p. 177, *bedeli*, p. 180, *bonnairei*  
p. 181, *viennensis*, p. 182, *biplagiatus*, *camptoides*, *gentilis*, p.  
*abeillei*, p. 185, Palaearctic region, GUILLEBEAU, Rev. d'Ent  
*O. consanguineus*, Cape Colony, PÉRINGUEY, Tr. S. African  
Soc. vi (2) : n. spp.  
*Phalacrus substriatus*, metamorphoses; GUILLEBEAU, p. 194,  
d'Ent. xi.  
*P. confusus*, p. 153 (and Échange, 1892, p. 20), *grouvellei*, *insu*  
p. 156, *mayeti*, *championi*, p. 158, Europe, GUILLEBEAU,  
d'Ent. xi, n. spp.

- Pryacoderus*, n. g., for *P. lemoroï*, n. sp., Biskra, GUILLEBEAU, p. 187, Rev. d'Ent. xi.  
*Tolyphus sedilloti*, Tunisia, GUILLEBEAU, p. 163, Rev. d'Ent. xi, n. sp.

## NITIDULIDÆ.

- [Cf. ABEILLE (1), BLACKBURN (93), BLATCH & HORNER (103), FAIRMAIRE (262), GROUVELLE (368, 369, 370, 371), GUILLEBEAU (375, 376), PÉRINGUEY (673), REITTER (725).]  
*Amphicrossus opacus*, Bengal, GROUVELLE, p. 60, Ann. Ent. Belg. xxxvi, n. sp.  
*Amphotis marginata*, habits ; WASMANN, p. 347, Deutsche e. Z. 1892.  
*Aporozoum*, n. g., for *Cozelus sylvaticus*, Phil. ; GERMAIN, p. 250, Act. Soc. Chili, ii.  
*Brachypeplus ater*, W. Africa, GROUVELLE, p. 292, Ann. Soc. Ent. Fr. lxi ; *B. birmanicus*, p. 834, *fecæ*, p. 835, Burma, GROUVELLE, Ann. Mus. Genov. (2) xii : n. spp.  
*Brachypterus obtusus*, Marseilles ; GUILLEBEAU, p. 2, Supp. to Échange, No. 19, 1886 ; *B. opacus*, p. 66, *drusus*, p. 67, Syria, ABEILLE, Rev. d'Ent. xi : n. spp.  
*Carpophilus (Urophorus) bicolor, heros*, p. 836, *C. (Ecnomorphus) murrayi*, p. 837, Burma, GROUVELLE, Ann. Mus. Genov. (2) xii ; *C. bosschæ*, Borneo, GROUVELLE, Notes Leyd. Mus. xiv, p. 43 : n. spp.  
*Cryptarchus alluaudi*, W. Africa, GROUVELLE, p. 293, Ann. Soc. Ent. Fr. xli ; *C. bicolor, nigropunctata*, p. 854, *fecæ*, p. 855, Burma, GROUVELLE, Ann. Mus. Genov. (2) xii : n. spp.  
*Cyllodes quadrinotatus undulatus*, p. 845, *dubius nigropunctatus*, p. 846, *limbatus, ænescens*, p. 847, *humeralis*, p. 848, Burma, GROUVELLE, Ann. Mus. Genov. (2) xii : n. spp.  
*Decamerus* and *Diontolobus*, Sol., belong to Nitidulidæ, not to Dermestidæ ; GERMAIN, p. 250, Act. Soc. Chili, ii.  
*Epureæ birmanica, consobrina*, p. 840, *reticulata*, p. 841, Burma, GROUVELLE, Ann. Mus. Genov. (2) xii, n. spp.  
*Eugoniopus reitteri*, Burma, GROUVELLE, p. 852, Ann. Mus. Genov. (2) xii, n. sp.  
*Idathina cincta*, note on ; BLACKBURN, p. 29, Tr. R. Soc. S. Austr. xv.  
*Ischna fecæ*, Burma, GROUVELLE, p. 842, Ann. Mus. Genov. (2) xii, n. sp.  
*Librodor egregius*, Burma, GROUVELLE, p. 856, Ann. Mus. Genov. (2) xii, n. sp.  
*Lobostoma*, n. g., near *Epureæ*, p. 90, for *L. picea*, n. sp, Obock, p. 91 ; FAIRMAIRE, Rev. d'Ent. xi.  
*Meligethes (Acanthogethes) reyi*, France, GUILLEBEAU, Échange, i, No. 7, p. 2, n. sp.  
*Mimema tabulæ*, S. Africa, PÉRINGUEY, p. 111, Tr. S. African Phil. Soc. vi, 2, n. sp.



- Neopallodes dentatus*, p. 849, *vicinus*, p. 850, Burma, GROUVELLE, Mus. Genov. (2) xii, n. spp.
- Notobrachypterus*, n. g., near *Brachypterus*, p. 26, for *N. australis*, c. p. 27, *bifoveatus*, *nitidiusculus*, p. 28, *liliputanus*, p. 29, n. spp., *tralia*; BLACKBURN, Tr. R. Soc. S. Austr. xv.
- Pallodes birmanicus*, *fecæ*, Burma, GROUVELLE, p. 851, Ann. Mus. G. (2) xii, n. spp.
- Parametopia bosscheæ*, Borneo, GROUVELLE, p. 44, Notes Leyd. xiv, n. sp.
- Physorhina reitteri*, Burma, GROUVELLE, p. 843, Ann. Mus. Genov xii, n. sp.
- Platamartus*, n. g., near *Cercus*, for *P. jakolewi*, n. sp., Siberia; REE p. 151, Wien. ent. Z. xi.
- Pocadites dubitabilis*, Burma, GROUVELLE, p. 843, Ann. Mus. G. (2) xii, n. sp.
- Pocadius testaceus*, Bengal, GROUVELLE, p. 60, Ann. Ent. Belg. x n. sp.
- Rhizophagus oblongicollis*, England, BLATCH & HORNER, Ent. N xxviii, p. 303, n. sp.
- Tetrisus epuræoides*, Burma, GROUVELLE, p. 839, Ann. Mus. Genov xii, n. sp.
- Tricanus punctatissimus*, p. 852, *striatopunctatus*, p. 853, Burma, GROUVELLE, Ann. Mus. Genov. (2) xii, n. spp.

## TROGOSITIDÆ.

[Cf. LÉVEILLÉ (552), XAMBEU (1921).]

- Alindria sedilloti*, = (*sikorai*, Kuw.); LÉVEILLÉ, p. cviii, Bull. Ent. Fr. lxi.
- Leptonyza fairmairei*, Rio de Janeiro, LÉVEILLÉ, p. xcv, Bull. Soc. Fr. lxi, n. sp.
- Nemosoma siculum*, Sicily, RAGUSA, p. 193, Nat. Sicil. xi, n. sp.
- Trogosita mauritanica*, metamorphoses; XAMBEU, p. 153, Ann. Sc. Lyon, xxxix.

## COLYDIIDÆ.

- [Cf. BLACKBURN (93), FAIRMAIRE (263), GROUVELLE (366, 368), P. GUEY (673).]
- Bothrideres capicola*, p. 111, *distinctus*, *scutatus*, p. 112, S. Africa, P. GUEY, Tr. S. African Phil. Soc. vi (2), n. spp.
- Corticus syriacus*, Akbès, FAIRMAIRE, p. 144, Ann. Ent. Belg. xxxvi,
- Ditoma opaca*, *elongata*, W. Africa, GROUVELLE, p. 296, Ann. Soc. Fr. lxi, n. spp.
- Mychocerus simonis*, Venezuela, GROUVELLE, p. 102, Ann. Soc. Ent. lxi, n. sp.
- Orthocerus funicornis*, Bed., cf. *Acotulus* in *Tenebrionidæ*.

- Paryphus erichsoni*, p. 99, *serratus*, *crassus*, p. 100, *obesus*, p. 101, Venezuela, GROUVELLE, Ann. Soc. Ent. Fr. lxi, n. spp.  
*Sparactus* : *Endophleus flexuosus* referred to this; GERMAIN, p. 252, Act. Soc. Chili, ii.  
*Tristaria labralis*, Victoria, BLACKBURN, p. 30, Tr. R. Soc. S. Austr. xv, n. sp.

## CUCUJIDÆ and RHYSODIDÆ.

- [Cf. BLACKBURN (93), GROUVELLE (367, 368, 369).]  
*Catogenes feæ*, Burma, GROUVELLE, p. 857, Ann. Mus. Genov. (2) xii, n. sp.  
*Cerylon alluaudi*, p. 297, *infimum*, *striolatum*, p. 298, W. Africa, GROUVELLE, Ann. Soc. Ent. Fr. lxi, n. spp.  
*Cryptamorphia macleayi*, N. S. Wales, BLACKBURN, p. 31, Tr. R. Soc. S. Austr. xv, n. sp.  
*Hylota feæ*, p. 858, *fallax*, p. 859, Burma, GROUVELLE, Ann. Mus. Genov. (2) xii, n. spp.  
*Læmophleus australasiae*, Victoria, BLACKBURN, p. 30, Tr. R. Soc. S. Austr. xv ; *L. rugifrons*, *mandibularis*, p. 860, *spinosus*, p. 861, Burma, GROUVELLE, Ann. Mus. Genov. (2) xii : n. spp.  
*Myrabolia lindensis*, S. Australia, p. 31, *parva*, N. S. Wales, p. 32, BLACKBURN, Tr. R. Soc. S. Austr. xv, n. spp.  
*Psammecus simonis*, Philippines, GROUVELLE, p. 287, Ann. Soc. Ent. Fr. lxi, n. sp.  
*Silvanopsis*, n. g., for *S. simonis*, Philippines, p. 286, *raffrayi*, Singapore, p. 287, n. spp. ; GROUVELLE, Ann. Soc. Ent. Fr. lxi.  
*Silvanus longicornis*, Philippines, GROUVELLE, p. 285, Ann. Soc. Ent. Fr. lxi ; *S. birmanicus*, *feæ*, Burma, GROUVELLE, p. 863, Ann. Mus. Genov. (2) xii : n. spp.  
*Rhysodes africanus*, W. Africa, GROUVELLE, p. 299, Ann. Soc. Ent. Fr. lxi, n. sp.

## CRYPTOPHAGIDÆ.

- [Cf. BLACKBURN (93), GUILLEBEAU (375), PÉRINGUEY (673), THOMSON (927).]  
*Atomaria godarti*, Marseilles, GUILLEBEAU, Échange, i, No. 6, p. 3 ; *A. eucalypti*, N. S. Wales, BLACKBURN, Tr. R. Soc. S. Austr. xv, n. sp.  
*Canoscelis grandis*, Sweden, THOMSON, Opusc. ent. xvi, p. 1773, n. sp.  
*Cryptophagus plagiatus*, S. Africa, PÉRINGUEY, p. 113, Tr. S. African Phil. Soc. vi (2) ; *C. gibbipennis*, Victoria, BLACKBURN, p. 32, Tr. R. Soc. S. Austr. xv : n. spp.  
*Emphyllus americanus*, habits ; SCHWARZ, P. E. Soc. Wash. ii, p. 227.

## LATHRIDIIDÆ, MYCETOPHAGIDÆ.

[*Cf.* BAUDI (43), BELON (53), BRISOUT (128), REITTER (725).]

*Colovocera oculata*, Burma, GESTRO, p. 878, Ann. Mus. Genov. (2) x, 1

*Corticaria normanna*, Calvados, BRISOUT, p. 68, Rev. d'Ent. xi ; *C. pulchra*, Taschkent, REITTER, p. 134, Wien. ent. Z. xi : n. spp.

*Melanophthalma birmana*, Burma, GESTRO, p. 879, Ann. Mus. Genov. x, n. sp.

*Monotoma punctata*, Sicily, RAGUSA, p. 201, Nat. Sicil. xi, n. sp.

*Tritoma siculæ*, Sicily, BAUDI, p. 121, Nat. Sicil. xi, n. sp.

## DERMESTIDÆ, BYRRHIDÆ.

[*Cf.* BLACKBURN (93, 94), COUCKE (193), FRIVALDSZKY (309), GUIBEAU (376), TRYON (953).]

Characters of the *Dermestidæ* and *Byrrhida* of Belgium; COUCKE, pp. 69-79, Ann. Ent. Belg. xxxvi.

*Anthrenus pimpinellæ*, n. var. *latefasciatus*; REITTER, p. 134, Wien. ent. Z. x.

*Attagenus pantherinus*, parasitic on *Anthophora*; BUYASSON, p. cclvii, 1 Soc. Ent. Fr. lxi.

*A. gobicola*, China, FRIVALDSZKY, p. 122, Term. füzetek, xv, n. sp.

*Trogoderma froggatti*, N. S. Wales, BLACKBURN, p. 34, Tr. R. Soc. Austr. xv; *T. reitteri*, S. Australia, BLACKBURN, p. 208, t. c. : n.

*Dendropinus calva, vestita*, New Guinea, TRYON (953), n. spp.

*Limnichus variegatus*, Fréjus, GUILLEBEAU, p. 3, Supp. to Échange, 19, 1886, n. sp.

*Pedilophorus æneus*, F., = (*subparallelus*, Motsch.); REITTER, p. Wien. ent. Z. xi.

## PAENIDÆ, HETEROCEBIDÆ.

[*Cf.* ANGELL (14), GERMAIN (322), GROUVELLE (369, 372), PÉRING (673).]

*Dryops opacus, ænescens*, Burma, GROUVELLE, p. 865, Ann. Mus. Genov. (2) xii, n. spp.

*Elmis columbiensis*, British Columbia, ANGELL, p. 84, Ent. News, *E. anthracinus, trivialis*, p. 245, *scissicollis*, p. 246, *nyctelioides*, p. 247, Chili, GERMAIN, Act. Soc. Chili, ii : n. spp.

*Macronychus minusculus*, Sumatra, GROUVELLE, p. 187, Notes Leyd. Mus. xiv, n. sp.

*Potamophilus fææ, longipes*, Burma, GROUVELLE, p. 864, Ann. Mus. Genov. (2) xii, n. spp.

*Sostea birmanica*, Tenasserim, GROUVELLE, p. 866, Ann. Mus. Genov. xii, n. sp.

*Stenelmis testacea, birmanica*, Burma, GESTRO, p. 867, Ann. Mus. Genov. (2) xii ; *S. bosschæ*, Borneo, *sulcata*, Sumatra, GROUVELLE, p. 868, Notes Leyd. Mus. xiv : n. spp.

*Strina promontorii*, S. Africa, PÉRINGUEY, p. 113, Tr. S. African Phil. Soc. vi (2), n. sp.

*Heterocerus capensis, meridionalis*, S. Africa, PÉRINGUEY, p. 114, Tr. S. African Phil. Soc. vi (2), n. spp.

#### LUCANIDÆ and PASSALIDÆ.

[*Cf.* FAIRMAIRE (263), NONFRIED (644, 648), RITSEMA (758, 759, 761 762), TRYON (953).]

List of *Lucanidæ* found in Java, Sumatra, and Nias, RITSEMA, pp. 139-144, Notes Leyd. Mus. xiv.

*Cyclommatus*, list of the described species; RITSEMA, Notes Leyd. Mus. xiv, pp. 3-6.

*C. frey-gessneri*, Java, RITSEMA, p. 1, t. c.; *C. squamosus*, Borneo, RITSEMA, p. 45, t. c. : n. spp.

*Dorcus parallelus, costatus, brevis*, synonymic note with figg.; HORN, Ent. News, 1892, p. 73, pl. iii.

*Hexarthrus cotesi*, E. India, NONFRIED, p. 365, Berl. Ent. Zeit. xxxvi, n. sp.

*Lucanus cervus*, variation in ♂ mandibles; BATESON & BRINDLEY, P. Z. S. 1892, p. 593.

*Nigidius oberndorferi*, Nossibé, NONFRIED, p. 118, Ent. Nachr. xviii, n. sp.

*Phalacrognathus musleri*, habitat, SKUSE, p. 20, P. Linn. Soc. N.S.W. (2) vii.

*Platycerus delagrangei*, Syria, FAIRMAIRE, p. 146, Ann. Ent. Belg. xxxvi, n. sp.

*Prosopocelus serricornis*, n. var. *brunneus*, NONFRIED, p. 119, Ent. Nachr. xviii, &c.

*P. pasteuri*, Java, RITSEMA, p. 31, Notes Leyd. Mus. xi; *P. tarsalis*, Java, RITSEMA, t. c. p. 191 : n. spp.

*Mastochilus subobliquus*, New Guinea, TRYON (953), n. sp.

#### SCARABÆIDÆ.

[*Cf.* BATESON & BRINDLEY (42), BEDEL (49, 50), BERGROTH (60), BLACKBURN (90, 91, 92, 93, 94, 95), BRENSKE (122, 123, 124, 125), CASEY (161), CROISSANDEAU (194), DISTANT (210), DUVIVIER (230), FAIRMAIRE (262, 263, 264, 268), FRIVALDSZKY (309), GESTRO (328), JACOBSON (443), JAKOWLEFF (451), KRAATZ (514), NEVINSON (635, 636), NONFRIED (642, 643, 644, 646, 647, 648), PÉRINGUEY (672), REITTER (725, 727, 729), SCHWARZ (808), SEMENOW (830, 832, 833, 834), SMITH (864, 865), STILES (901), XAMBEU (1021); also *Cetoniini*, p. 119.]

Hours of flight of *Scarabæidæ*; SCHWARZ (808).

#### *Coprini.*

*Ammæcius eleratus*, metamorphoses; XAMBEU, p. 165, Ann. Soc. L. Lyon, xxxix.

- Aphodius fessor*, p. 157, *alpinus*, p. 158, *depressus*, p. 162, metamorph. XAMBEU, Ann. Soc. L. Lyon, xxxix. *A. granarius*, p. 1, *depressus*, p. 16, metamorphoses; XAMBEU, Mœurs, ii.
- A. bidentulus*, *gibbifrons*, Obock, FAIRMAIRE, p. 92, Rev. d'Ent. *yorkensis*, S. Australia, BLACKBURN, p. 209, Tr. R. S. Austr. xv; *A. frenchi*, *lindensis*, S. Australia, BLACKBURN, t. c. : n. spp.
- Atenius mendax*, Victoria, *torridus*, S. Australia, BLACKBURN, p. 36, Soc. S. Austr. xv, n. spp.
- Atuchetus*, n. subg. of *Scorabæus*; BEDEL, p. 283, Abeille, xxvii.
- Athyreus chalybeatus*, Argentine Rep., FAIRMAIRE, p. 242, Ann. Ent. xxxvi, n. sp.
- Autolethrus*, n. subg. of *Lethrus*; SEMENOW, Hor. Ent. Ross. xxvi, *Bolboceras serripes*, Fairm., ♂ described; GESTRO, p. 756, Ann. Genov. (2) xii.
- B. gagarinei*, Turkestan, FAIRMAIRE, p. cxxii, Bull. Soc. Ent. I. *B. gaujani*, Obock, FAIRMAIRE, p. 95, Rev. d'Ent. xi; *B. Transvaal*, DISTANT, p. 191, pl. i, fig. 5, Naturalist Transvaal, n. spp.
- Catharsius insignis*, *cephulotes*, S. W. Africa, PÉRINGUEY, p. 27, African Phil. Soc. vi, 2, n. spp.
- Chatopisthes termiticola*, Burma, GESTRO, p. 904, Ann. Mus. (2) x, n. sp.
- Copris carolina*, anatomy of mouth and homology of mandibles; pp. 83-87, pls. ii & iii, Tr. Am. Ent. Soc. xix.
- Geotrupini*: notes on Jacobsohn's classification; REITTER, pp. 27-31, Wien. ent. Z. xi.
- Geotrupes*: revision of the genera allied to, or subgenera of; JACOBSON, Hor. Ent. Ross. xxvi, pp. 245-257. *G. vernalis*, var. FAUVEL, p. 57, Rev. d'Ent. xi.
- Glaresis oxiana*, W. Turkestan, SEMENOW, p. 470, Hor. Ent. Ross. xxxvi, n. sp.
- Hybosorus incultus*, S. W. Africa, PÉRINGUEY, p. 31, Tr. S. Africa Phil. Soc. vi, 2, n. sp.
- Lethrotrypes*, n. subg. of *Thorectes*; JACOBSON, p. 257, Hor. Ent. Ross. xxvi.
- Lethrulus*, n. subg. of *Lethrus*, SEMENOW, p. 235, Hor. Ent. Ross. xxvi.
- Lethrus*, n. subg., see *Autolethrus*, *Lethrulus*, *Scolelethrus*.
- L. ænescens*, p. cxxi, *bradytus*, *mediocris*, p. cxxii, Turkestan, FAIRMAIRE, Bull. Soc. Ent. Fr. lxi; *L. mandibularis*, p. 182, *forcipatus*, Asia Minor, *spinimanus*, Askhabad, p. 190, JAKOWLEFF, Hor. Ent. Ross. xxvi; *L. (Heteroplistodus) jakowlewi*, Kirghisia, p. 191, JAKOWLEFF, Hor. Ent. Ross. xxvi; *L. (Autolethrus) koshanstschikovi*, Transcaspian region, p. 192, SEMENOW, Hor. Ent. Ross. xxvi : n. spp.
- Mesodius feculentus*, Obock, FAIRMAIRE, p. 93, Rev. d'Ent. xi, n. sp.
- Mesotrypes*, n. subg. of *Thorectes*; JACOBSON, p. 256, Hor. Ent. Ross. xxvi.

- Neotodon*, n. n. for *Octodon*, Lansb. ; BEDEL, p. 282, Abeille, xxvii.  
*Onitis* : synopsis of the Mediterranean species of *Chironitis*, *Onitis*, and *Rubus* ; BEDEL, pp. 250-280, Abeille, xxvii.  
*O. suspectus*, *amabilis*, p. 29, *bovinus*, *exiguus*, p. 30, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi, 2 ; *O. intermedius*, China, FRIVALDSZKY, p. 122, Term. füzetek, xv : n. spp.  
*Onthophagus furciceps*, Mars., characters of ; HEYDEN, p. 112, Wien. ent. Z. xi. *O. crocatus*, Muls., = (*imitator*, Reit.) ; REITTER, p. 26, Wien. ent. Z. xi. *O. ater*, n. var., *granulipennis*, FRIVALDSZKY, p. 123, Term. füzetek, xv. *O. adelaidæ*, Hope, = (*hostilis*, Har.) ; BLACKBURN, p. 283, P. Linn. Soc. N.S.W. (2) vii.  
*O. trispinus*, Margelan, REITTER, p. 63, Wien. ent. Z. xi ; *O. sulcicollis*, Margelan, REITTER, p. 135, t. c. ; *O. quadriarmatus*, Obock, FAIRMAIRE, p. 91, Rev. d'Ent. xi ; *O. geelongensis*, Victoria, BLACKBURN, p. 34, Tr. R. Soc. S. Austr. xv ; *O. blackwoodensis*, *henleyensis*, S. Australia, p. 208, *nitidior*, N. S. Wales, p. 209, BLACKBURN, t. c. ; *O. murchisoni*, Australia, BLACKBURN, p. 25, op. cit. xvi : n. spp.  
*Oxyterson macleayi*, Amazons, *pleroderum*, Brazil, NEVINSON, Ent. M. M. xxviii, p. 34, n. spp.  
*Phænus* : synonymic list of the species ; NEVINSON (636).  
*P. fohri*, Mexico, NEVINSON, Ent. M. M. xxviii, p. 33, n. sp.  
*Proctammodes*, n. n. for *Proctophanes*, Har. (*nec Proctophana*, Lac.) ; BLACKBURN, p. 37, Tr. R. Soc. S. Austr. xv.  
*Psammobius plicatulus*, Obock, FAIRMAIRE, p. 95, Rev. d'Ent. xi, n. sp.  
*Rhyssenus asperocostatus*, *lesifrons*, Obock, FAIRMAIRE, p. 94, Rev. d'Ent. xi, n. spp.  
*Scarabæus plausibilis*, S. Africa, PÉRINGUEY, p. 25, Tr. S. African Phil. Soc. vi (2), n. sp.  
*Scelolethrus*, n. subg. of *Lethrus* ; SEMENOW, p. 236, Hor. Ent. Ross. xxvi.  
*Silotrupes epistomalis*, note on ; CROISSANDEAU, p. lviii, Bull. Soc. Ent. Fr. lxi.  
*Thorectes cheroni*, Corsica, CROISSANDEAU, p. ccxxi, Bull. Soc. Ent. Fr. lxi, n. sp.  
*Trox scaber*, metamorphoses ; XAMBEU, p. 168, Ann. Soc. L. Lyon, xxxix.  
*T. elderi*, *tatei*, S. Australia, p. 37, *eremita*, Centr. Australia, *quadridens*, S. Australia, p. 38, *euclensis*, W. Australia, *augusta*, S. Australia, p. 39, *relutinus*, N. Queensland, p. 40, BLACKBURN, Tr. R. Soc. S. Austr. xv, n. spp.

### *Glaphyrini* and *Melolonthini*.

- Catalogue of *Glaphyrides*, *Systellopides*, *Melolonthides*, and *Euchirides*, described since the Munich Catalogue ; NONFRIED, Berl. Ent. Zeit. xxxvii, pp. 249-290.  
Classification of *Rhizotrogides* and *Melolonthides* ; BRENSKE, pp. 33-38, Berl. Ent. Zeit. xxxvii.  
*Ancylonycha holosericea*, Redt., referred to *Hilyotrogus* ; BRENSKE, p. 154, Ent. Nachr. xviii.

- A. cochinchina* (sic), Cochin China, NONFRIED, p. 360, Berl. Ent. xxxvi, n. sp.
- Anozia pilosa*, F., = (*cinerea*, Motsch.) ; SEMENOW, p. 476, Hor. Ross. xxvi.
- Brahmina* : revision of the genus, referring to it various species in other genera, and merging in it *Rhizocolar*, Mots., and *Crybius*, Kraatz ; BRENSKE, Berl. Ent. Zeit. xxxvii, pp. 79-124 *rubretra*, Fald., and allied species, notes on ; KRAATZ, Deut. Z. 1892, p. 309. *B. conspersa*, *sibirica*, note on ; BRENSKE, l. c.
- B. bengalensis*, Bengal, NONFRIED, p. 229, Berl. Ent. Zeit. xxxv *donckieri*, Darjeeling, p. 86, *castanipes*, *sibirica*, E. Siberia, *turkistanica*, Turkestan, p. 94, *phytaloides*, Saigon, p. 98, *setosa*, jeeling, p. 99, *cotesi*, Sikkim, p. 100, *chinensis*, China, p. 101, *ab* Saigon, p. 102, *siamensis*, Malacca, p. 103, *microphylla*, *turo flabellata*, E. India, p. 104, *sumatrensis*, Sumatra, *obscura*, l Hills, p. 105, *cribripennis*, Sumatra, p. 106, *rugulosa*, Borneo, *heydeni*, Korea, *cardoni*, p. 108, *thoracica*, p. 109, E. India, *China*, p. 112, *himalayica*, *sikkimensis*, E. India, p. 113, *bur* Buroo Is., p. 114, BRENSKE, Berl. Ent. Zeit. xxxvii : n. spp.
- Byrrhomorpha*, n. g., near *Heteronyx*, p. 109, for *B. verres*, p. 110, *rosa*, p. 111, n. spp., Australia ; BLACKBURN, P. Linn. Soc. l (2) vii.
- Ceraspis elegans*, *imitatrix*, Honduras, NONFRIED, p. 224, Berl. Ent. xxxvi, n. spp.
- Cheiragra macleayi*, Victoria, BLACKBURN, p. 482, P. Linn. Soc. l (2) vi, n. sp.
- Colpochila campestris*, W. Australia, BLACKBURN, p. 103, P. Linn. Soc. N.S.W. (2) vii, n. sp.
- Cryphaobius* : validity and characters of the genus ; KRAATZ, Deut. Z. 1892, pp. 307-311.
- Cyphonotus oryctoides*, Transcaspian region, SEMENOW, p. 474, Hor. Ross. xxvi, n. sp.
- Dejeania bremskei*, Siam, NONFRIED, p. 226, Berl. Ent. Zeit. xxxvi, *Diphucephala elegans*, Victoria, BLACKBURN, p. 481, P. Linn. Soc. l (2) vi ; *D. spreata*, W. Australia, BLACKBURN, p. 99, P. Linn. Soc. N.S.W. (2) vii : n. spp.
- Empecta cambouei*, Madagascar, NONFRIED, p. 107, Ent. Nachr. xviii *Encya nigra*, Madagascar, NONFRIED, p. 227, Berl. Ent. Zeit. xxxvi *Eupegyli*, n. g., *Schizonychides*, for *E. confusa*, n. sp., Congo, DUV. p. 56, Ann. Ent. Belg. xxxvi.
- Frenchella*, n. g., near *Colpochila*, for *F. lubrica*, n. sp., V. BLACKBURN, p. 104, P. Linn. Soc. N.S.W. (2) vii.
- Glaphyrus sogdianus*, Zerfashan, SEMENOW, p. 477, Hor. Ent. xxxvi, n. sp.
- Haplopsis viridis*, Australia, BLACKBURN, p. 109, P. Linn. Soc. l (2) vii, n. sp.

- Heptophylla*, Motsch., characters amended; BRENSKE, p. 155, Ent. Nachr. xviii.
- Heteronyx baldi*ensis, p. 485, *terrena*, p. 486, *incognitus*, *alpicola*, p. 487, *tridens*, p. 489, *consanguineus*, p. 490, *proditor*, p. 492, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) vi; *H. merus*, *arcanus*, p. 106, *protervus*, p. 107, Queensland, BLACKBURN, P. Linn. Soc. N.S.W. (2) vii; *H. rhinoceros*, p. 284, *marcidus*, p. 285, Australia, BLACKBURN, t. c.; *H. szverus*, *alienus*, p. 29, *fervidus*, p. 30, *decorus*, *fraserensis*, p. 31, *cribriceps*, p. 32, *siccus*, *helmsi*, p. 33, *furvus*, p. 34, Australia, BLACKBURN, Tr. R. Soc. S. Austr. xvi : n. spp.
- Holotrichia bicolor*ea, Heyd., referred to *Ililyotrogus*, BRENSKE, p. 154, Ent. Nachr. xviii.
- H. furinosa*, E. India, NONFRIED, p. 228, Berl. Ent. Zeit. xxxvi; *H. glubriclypeata*, E. India, *cochinchina*, Cochin China, p. 161, *obscura*, Sikkim, p. 162, *lata*, Hong Kong, *richteri*, Borneo, p. 163, *scabrifrons*, Ceylon, p. 164, *behrensi*, Sumatra, *flachi*, Manilla, p. 165, *staudingeri*, Sikkim, p. 166, *frontalis*, *cavifrons*, p. 167, *sericata*, p. 168, *sikkimensis*, p. 169, *biehli*, E. India, *javana*, Java, p. 170, *nitida*, p. 171, *aurosericea*, p. 172, E. India, *foveolata*, Borneo, p. 173, *scrobiculata*, Sikkim, p. 174, *bombycina*, Tenasserim, p. 175, *iridipennis*, *nigricollis*, E. India, p. 177, *singhalensis*, Ceylon, p. 178, *karschi*, E. India, p. 179, *purva*, Ceylon, *sharp*i, Borneo, p. 180, *longicarinata*, *kallies*, p. 181, *standfussi*, Sumatra, p. 182, *mazillata*, Java, p. 183, *anthracina*, p. 184, *cotesi*, *plagiata*, p. 185, E. India, *setos*a (Walk.), Ceylon, p. 186, *bipunctata*, Java, *burmeisteri*, p. 187, *philippinea*, p. 188, Philippines, *inducta* (Walk.), Ceylon, p. 189, *pygidialis*, Sumatra, *glabrifrons*, Khasia Hills, p. 190, *atkinsoni*, S. India, p. 191, BRENSKE, Berl. Ent. Zeit. xxxvii : n. spp.
- Homaloptia ruricola*, metamorphoses; XAMBEU, Mœurs, ii, p. 30. *H. diabolica*, Reitt., = (*ursina*, Fairm.); BRENSKE, p. 170, Ann. Ent. Belg. xxxvi.
- H. ursina*, *mutilata*, Syria, FAIRMAIRE, p. 147, Ann. Ent. Belg. xxxvi, n. spp.
- Hoplia fasciculata*, p. 108, *cornuta*, p. 109, Madagascar, NONFRIED, Ent. Nachr. xviii; *H. siningensis*, China, FRIVALDSZKY, p. 123, Term. füzetek, xv : n. spp.
- Isonychus prasinus*, Honduras, NONFRIED, p. 223, Berl. Ent. Zeit. xxxvi, n. sp.
- Lachnosterna* as intermediate host of a parasite affecting Swine; STILES (901).
- L. senegalensis*, Africa, NONFRIED, p. 106, Ent. Nachr. xviii, n. sp.
- Lachnota bedeli*, Siberia, BERGROTH, p. 98, Wien. ent. Z. xi.
- Lasiopsis*, Er., and allied genera, composition of; BERGROTH, p. 98, Wien. ent. Z. xi.
- L. bergrothi*, Caucasus, REITTER, p. 101, Wien. ent. Z. xi, n. sp.
- Lepidiota pauper*, Sumatra, p. 40, *siamensis*, Siam, p. 41, *nonfriedi*, Hong Kong, p. 42, *crenaticollis*, E. India, p. 43, *richteri*, Himalaya, p. 44,



- L. (Eucirrus) elegans*, Borneo, p. 45, *L. sus*, Malay Peninsula, China, p. 46, *ornata*, Sumatra, p. 47, *africana*, Senegal, *reuleaui*, New Guinea, p. 49, *quedenfeldti*, Aduma, *labrata*, T. p. 50, *oberndorferi*, Sumatra, p. 51, BRENSKE, Berl. Ent. xxxvii, n. spp.
- Leucopholis rufa*, p. 52, *lungiena*, p. 53, *celebensis*, Celebes, *sumat* Sumatra, p. 54, *nigra*, Borneo, p. 55, *lateralis*, Malacca, *staudingeri*, Borneo, p. 57, *crassa*, Assam, *elongata*, E. India ?, *tristis*, Malacca, p. 59, BRENSKE, Berl. Ent. Zeit. xxxvii, n. spp.
- Liogenys opacicolis*, *bidentulus*, Argentine Rep., FAIRMAIRE, p. 243 Ent. Belg. xxxvi, n. spp.
- Liparetrus spretus*, p. 482, *alpicola*, p. 483, Australia, BLACKBURN Linn. Soc. N.S.W. (2) vi; *L. maurus*, p. 99, *lugens*, *adelaidæ*, p. 101, Australia, BLACKBURN, P. Linn. Soc. N.S. vii : n. spp.
- Liparocheilus rufus*, Australia, BLACKBURN, p. 25, Tr. R. Soc. S. xv, n. sp.
- Mæchidius tibialis*, N. S. Wales, BLACKBURN, Tr. R. Soc. S. xv, n. sp.
- Melichrus*, n. g., *Rhizotrogides*, for *M. kolbei*, n. sp., Darjeeling : BR p. 156, Ent. Nachr. xviii.
- Melolontha* : ravages and numbers of *M. vulgaris* and *hippocast* Sweden ; LAMPA (536). *M. hippocastani*, n. var. *baicalica* ; R. p. 152, Wien. ent. Z. xi.
- M. siamensis*, Siam ; NONFRIED, p. 230, Berl. Ent. Zeit. xxxvi, n. : *Metabolus flavescens*, Turkestan, BRENSKE, p. 153, Ent. Nachr. xvii
- Monotropus starcki*, Charkow, REITTER, p. 142, Wien. ent. Z. xi, n
- Ocnodus lugubris*, W. Australia, BLACKBURN, p. 105, P. Linn. Soc. (2) vii; *O. spinicollis*, p. 27, *fallax*, *ferrugineus*, p. 28, A. BLACKBURN, Tr. R. Soc. S. Austr. xvi : n. spp.
- Octoplasia*, n. g. for *Lachnosterna lineata* and *princeps*, Shp. ; B. p. 152, Ent. Nachr. xviii.
- Polyphylla diffracta*, New Mexico, CASEY, p. 18, Ann. N. York n. sp.
- Pseudoheteronyx*, n. g., near *Heteronyx*, for *P. helæoides*, n. sp., QUEE BLACKBURN, p. 111, P. Linn. Soc. N.S.W. (2) vii.
- Pseudopholis*, n. g., near *Leucopholis*, p. 57, for *P. squamulosa*, n. sp. p. 58 ; DUVIVIER, Ann. Ent. Belg. xxxvi.
- Pseudotrochalus brenskei*, Zambesi, NONFRIED, p. 106, Ent. Nach n. sp.
- Rhabdopholis melolonthoides*, hab. ?, BRENSKE, p. 157, Ent. Nach n. sp.
- Rhizocolax senescens*, = (*Rhizotrogus potamini*, Sem.) ; SEMENOW Hor. Ent. Ross. xxvi.
- Rhizotrogus cicatricosus*, metamorphoses ; XAMBEU, p. 173, Ann. Lyon, xxxix. *R. altaicus*, = (*Monotropus suworzevi*, SEMENOW, p. 472, Hor. Ent. Ross. xxvi.

- Rhopheu soror, mussoni*, N. S. Wales; BLACKBURN, P. Linn. Soc. N.S.W. (2) vii, p. 112, n. spp.
- Schizonycha angustiformis*, Obock, *aspericollis*, Abyssinia, FAIRMAIRE, p. 96, Rev. d'Ent. xi; *S. curtula*, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi, 2 : n. spp.
- Sciton*, n. g., near *Anodontonyx*, p. 101, for *S. ruber*, n. sp., S. Australia, p. 102; BLACKBURN, P. Linn. Soc. N.S.W. (2) vii.
- Serica carneola*, p. 34, *deceptor*, *obesa*, *lucidula*, p. 35, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. v, 2; *S. subglobosa*, Centr. Africa, NONFRIED, p. 105, Ent. Nachr. xviii; *S. picea*, Siam, NONFRIED, p. 359, Berl. Ent. Zeit. xxxvi; *S. iridescens*, Borneo, p. 221, *siamensis*, Siam, p. 222, NONFRIED, Berl. Ent. Zeit. xxxvi : n. spp.
- Symmachia*, n. g., near *Brahmina*, for *S. chinensis*, n. sp., China; BRENSKE, p. 151, Ent. Nachr. xviii.
- Tanyproctus rugulosus*, Syria, FAIRMAIRE, p. 148, Ann. Ent. Belg. xxxvi, n. sp.
- Thyce blaisidelli*, pp. 19 & 214, *squamosa*, p. 20, California, CASEY, Ann. N. York Ac. vi, n. spp.
- Tricholepis grandis*, Cast., = (*Leucopholis manillæ*, Redt.) ; BRENSKE, p. 61, Berl. Ent. Zeit. xxxvii.
- Triodonta flavimana*, Burm., = (*difformipes*, Fair.) ; BRENSKE, p. 170, Ann. Ent. Belg. xxxvi.
- T. modesta*, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi, 2, p. 36; *T. difformipes*, *dispar*, Syria, FAIRMAIRE, p. 146, Ann. Ent. Belg. xxxvi : n. spp.
- Trochulus modestus*, p. 32, *mærens*, *plagiger*, *rufovittatus*, p. 33, *mæstus*, *plagiatus*, p. 34, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi, 2, n. spp.

### *Rutelini.*

- List of *Rutelidæ* described since the Munich Catalogue; NONFRIED (643).
- Adoretus parviceps*, Obock, FAIRMAIRE, p. 93, Rev. d'Ent. xi; *A. sykoræ*, Madagascar, *kahlei*, Zambesi, p. 110, *fascicularis*, Abyssinia, p. 117, NONFRIED, Ent. Nachr. xviii; *A. flavovittatus*, Siam, p. 362, *castaneus*, Borneo, p. 363, *griseosetosus*, Siam, p. 364, NONFRIED, Berl. Ent. Zeit. xxxvi : n. spp.
- Anomala obscuripes*, Obock, FAIRMAIRE, p. 97, Rev. d'Ent. xi; *A. win-drathi*, Siam, NONFRIED, Berl. Ent. Zeit. xxxvi, p. 361; *A. viridicostata*, p. 86, *hirsutula*, p. 87, *nigripes*, p. 88, S. China, NONFRIED, Ent. Nachr. xviii; *A. australasie*, Queensland, BLACKBURN, p. 113, P. Linn. Soc. N.S.W. (2) vii; *A. (Euchlora) nigra*, p. 234, *A. fruhstorferi*, p. 235, Java, *inscripta*, Siam, p. 236, *pyropyga*, Venezuela, p. 237, NONFRIED, Berl. Ent. Zeit. xxxvi : n. spp.
- Anoplognathus brevicollis*, p. 493, *macleayi*, p. 495, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) vi, n. spp.
- Areoda magnifica*, Brazil, NONFRIED, p. 238, Berl. Ent. Zeit. xxxvi, n. sp.

- Epectinaspis hondure*, Honduras, NONFRIED, p. 232, Berl. Ent. Zeit. xxxvi, n. sp.
- Euchlora heydeni*, China, FRIVALDSZKY, p. 124, Term. füzetek, n. sp.
- Gnatholabis dorsalis*, p. 299, *nickerli*, p. 301, Trop. Africa, KRAATZ, Deutsche e. Z. 1892, n. spp.
- Hadropopillia*, n. g., for *Popillia splendida*, Guér. ; KRAATZ, p. Deutsche e. Z. 1892.
- Heteroplia siamensis*, Siam, NONFRIED, p. 362, Berl. Ent. Zeit. x n. sp.
- Ischnopopillia*, n. g., p. 292, for a part of *Popillia* and *I. moorei*, p. *erythroptera*, p. 295, n. spp., E. India ; KRAATZ, Deutsche e. Z. 1892.
- Leucothyreus purpureo-sericeus*, Ecuador, NONFRIED, p. 239, Berl. Ent. Zeit. xxxvi, n. sp.
- Malaia? semperi*, Philippines, KRAATZ, p. 178, Deutsche e. Z. 1892, referred below to *Pseudomalaia*, n. g.), n. sp.
- Parastasia bigibbosa*, Siam, NONFRIED, p. 238, Berl. Ent. Zeit. x n. sp.
- Phyllopertha latitarsis*, p. 232, *sericeomicans*, p. 233, Honduras, NONFRIED, Berl. Ent. Zeit. xxxvi, n. spp.
- Pecilosticta*, n. g., p. 290, for *P. princeps*, n. sp., Ceylon, p. 291 ; KRAATZ, Deutsche e. Z. 1892.
- Popillia* : revision of ; KRAATZ, Deutsche e. Z. 1892, pp. 177, &c.
- P. flavoteniata*, Cameroons, NONFRIED, p. 118, Ent. Nachr. xviii *oberthuri*, Zanzibar, p. 184, *candezei*, Fernando-Po, p. 185, *vel* Angola, p. 187, *erythropus*, Sierra Leone, p. 191, *smaragdina*, p. *cupripes*, *laricollis*, p. 229, *soror*, p. 230, *bitacta*, p. 233, W. A. *strigilata*, E. Africa, p. 235, *signifera*, p. 237, *opaca*, p. 238, W. A. *perrottetii*, p. 244, S. India, *semianea*, Kiu-Kiang, p. 251, S. Hong Kong, p. 252, *viridula*, Thibet, p. 255, *straminipennis*, p. *subquadrata*, p. 259, *anomaloidea*, p. 260, *6-maculata*, p. 261, *6-fex*, p. 269, *testaceipennis*, p. 270, *flavofusciata*, p. 271, Burma, *collis*, p. 272, *nottrotti*, p. 273, *laricollis*, p. 275, *pilicollis*, p. 2 India, *andamanica*, p. 279, Andaman Is., *sumatrensis*, Sumatra, *variabilis*, p. 283, *picticollis*, p. 284, *depressiuscula*, p. 286, *de* p. 287, Philippines, KRAATZ, Deutsche e. Z. 1892 : n. spp.
- Pseudomalaia*, n. g., for *Popillia pilifera*, Burm., *tagala*, Hell., and *semperi* (Kr., *suprà*) ; KRAATZ, p. 296, Deutsche e. Z. 1892.
- Rhinyptia dollei*, *plana*, and *Amphimallon rostratum*, queried as syno- FAIRMAIRE, p. 97, Rev. d'Ent. xi.
- R. testacea*, E. India, NONFRIED, p. 230, Berl. Ent. Zeit. n. sp.
- Singhala schabilei*, S. China, NONFRIED, p. 89, Ent. Nachr. n. sp.
- Spilopopillia*, n. g., for *Popillia scsguttata*, Fairm. ; KRAATZ, p. Deutsche e. Z. 1892.

*Dynastini.*

- Anevrystypus collaris*, W. Australia, BLACKBURN, p. 286, P. Linn. Soc. N.S.W. (2) vii, n. sp.  
*Corynophyllus metallicola*, N. S. Wales, BLACKBURN, p. 286, P. Linn. Soc. N.S.W. (2) vii, n. sp.  
*Cyclocephala occipitalis*, Argentine Rep., FAIRMAIRE, p. 244, Ann. Ent. Belg. xxxvi, n. sp.  
*Dichodontus renkeni*, Borneo, NONFRIED, p. 365, Berl. Ent. Zeit. xxxvi, n. sp.  
*Ligyrrus bidentulus, distinctus*, Argentine Rep., FAIRMAIRE, p. 244, Ann. Ent. Belg. xxxvi, n. spp.  
*Oryctomorphus* : notes on the species ; GERMAIN, p. 260, Act. Soc. Chili, ii.  
*Phyllognathus fortipes*, Obock ; FAIRMAIRE, p. 98, Rev. d'Ent. xi, n. sp.  
*Pseudoryctes tectus*, Australia, BLACKBURN, p. 211, Tr. R. Soc. S. Austr. xv, n. sp.  
*Xylotrupes gideon*, statistics of variation of horns of male ; BATESON & BRINDLEY, P. Z. S. 1892, p. 589.

*Cetoniini.*

- [Cf. BLACKBURN (91), GESTRO (327), JANSON (454), KOLBE (502, 503, 505, 507, 508), KRAATZ (515, 516, 518), NONFRIED (644, 647, 648), PÉRINGUEY (672, 673), XAMBEU (1021).]  
*Agénus elegans*, Cape Colony, PÉRINGUEY, p. 115, Tr. S. African Phil. Soc. vi (2), n. sp.  
*Anaspilus*, n. g., near *Cymophorus*, p. 140, for *A. rufiventris*, n. sp., Guinea, p. 141 ; KOLBE, S. E. Z. liii.  
*Anelaphinis*, n. g., for *Cetonia dominula*, Har. ; KOLBE, p. 136, S. E. Z. liii.  
*Aphanesthes*, n. g., near *Chordodera*, p. 248, for *A. pseudincoides*, n. sp., Cameroons, p. 249 ; KOLBE, SB. nat. Fr. 1892.  
*Cetonia (Pachnoda) kustai*, Centr. Africa, NONFRIED, p. 122, Ent. Nachr. xviii ; *C. montana*, Himalaya, NONFRIED, p. 371, Berl. Ent. Zeit. xxxvi ; *C. rhododendri*, p. 847, pl. ii, fig. 9, *oatesii*, p. 848, *cariana*, p. 849, Burma, GESTRO, Ann. Mus. Genov. (2) x : n. spp.  
*Cænochilus leoninus*, S. W. Africa, PÉRINGUEY, p. 39, Tr. S. African Phil. Soc. vi (2) ; *C. (Xenogenius) conradti*, E. Africa, KOLBE, p. 71, SB. nat. Fr. 1892 : n. spp.  
*Conradtia*, n. g., near *Diplognatha*, p. 69, for *C. principalis*, n. sp., E. Africa, p. 70 ; KOLBE, SB. nat. Fr. 1892.  
*Corynotrichius*, n. g., *Trichiides*, p. 259, for *C. bicolor*, n. sp., Cameroons, p. 260 ; KOLBE, SB. nat. Fr. 1892.  
*Cymophorus monticola*, E. Africa, KOLBE, p. 71, SB. nat. Fr. 1892 ; *C. toganus*, p. 139, *flavonotatus*, p. 140, Guinea, KOLBE, S. E. Z. liii : n. spp.  
*Digenethle calata*, Gestro, = (*ramulosipennis*, Thoms.) ; GESTRO, p. 855, Ann. Mus. Genov. (2) x.

- Diphrontis monticola*, Cameroons, KOLBE, SB. nat. Fr. 1892, p. n. sp.
- Diploa*, n. g., near *Xiphoscelis*, for *D. probes*, n. sp., E. Africa; KO p. 65, SB. nat. Fr. 1892.
- Diplognatha montana*, E. Africa, KOLBE, p. 68, SB. nat. Fr. 1892
- preussi*, Cameroons, KOLBE, p. 256, t. c. : n. spp.
- Dolichostethus*, n. g., for *Elaphinis atomospora*, Fairm.; KOLBE, p. S. E. Z. liii.
- Epistalagma cornuta*, n. sp., for an insect which is probably the *E. multiimpressa*, Fairm., KRAATZ, Deutsche e. Z. 1892, p. figured, pl. iv, fig. 4.
- Eucosma breviceps*, Cameroons, KOLBE, p. 253, SB. nat. Fr. 1892
- E. flavoguttata*, Guinea, KOLBE, p. 132, S. E. Z. liii : n. spp.
- Eudicella smithi*, var. *trilineata*, Quæf., = (*thomsoni*, Ancy, and *guardi*, Oberth.); KOLBE, p. 63, SB. nat. Fr. 1892.
- Euloxacus*, n. g., *Trichiides*, p. 72, for *E. conradti*, n. sp., E. Africa, p. KOLBE, SB. nat. Fr. 1892.
- Eupachnoda*, n. g., for *Pachnoda inscripta*; KOLBE, p. 253, SB. nat. 1892.
- Eutelesthes*, n. g., near *Plasiorrhina*, for *E. luteris*, n. sp., Camero KOLBE, SB. nat. Fr. 1892, p. 252.
- Gnathocera hyacinthina*, Kr., = (*schlütteri*, Nonf., *infra*), *G. vi Jans.*, = (*cincta*, Kr.); KRAATZ, p. 172, Deutsche e. Z. 1892.
- hyacinthina*, Jans., = (*hyacinthina*, Kr.); KRAATZ, t. c. p. 415.
- G. augustata*, p. 128, *flavovirens*, p. 129, Guinea, KOLBE, S. E. Z. liii
- schlütteri*, Centr. Africa, NONFRIED, p. 121, Ent. Nachr. x n. spp.
- Gnorimus*: table of characters of the palæarctic species; ZOUFAL, pp & 242, Wien. ent. Z. xi. *G. variabilis*, var. *heydeni* discus BECKERS, p. 315, Wien. ent. Z. xi: larva described; FOWLER, M. M. xxviii, p. 242.
- Hadrosticta*, n. g., near *Argyripa*, for *H. viridiflua*, n. sp., Central Ame KRAATZ, p. 378, Deutsche e. Z. 1892.
- Heterorrhina euryrrhina*, p. 838, pl. ii, figs. 1 & 2, *leonardi*, p. 840, fi & 4, Burma, GESTRO, Ann. Mus. Genov. (2) x, n. spp.
- Jothochilus*, n. g., *Anoplochilinae*, p. 136, for *J. undulatus*, n. sp., Gu p. 137; KOLBE, S. E. Z. liii.
- Leucocelis parallelocollis*, *lunicollis*, p. 66, *annulipes*, *polysticta*, p. 6 Africa, KOLBE, SB. nat. Fr. 1892, n. spp.
- Liotrichius*, n. g., *Trichiides*, p. 73, for *L. anomala*, n. sp., E. Africa, p. KOLBE, SB. nat. Fr. 1892.
- Lomaptera jamesi*, n. varr. *lizi*, p. 366, *nobilitatu*, p. 368; NONFRIED, Ent. Zeit. xxxvi.
- Macrelaphinis kraatzi*, Kolbe, note on; KRAATZ, p. 415, Deutsche 1892.
- M. buttneri*, Guinea, *kraatzi*, Ashanti, KOLBE, S. E. Z. liii, p. 134, n.
- Macroma superba*, figured, pl. ii, fig. 11; GESTRO, Ann. Mus. Genov. (

- M. camerunica*, W. Africa, KOLBE, p. 258, SB. nat. Fr. 1892; *M. exclamationis*, *klingi*, Guinea, KOLBE, p. 138, S. E. Z. liii; *M. insignis*, Burma, GESTRO, p. 852, Ann. Mus. Genov. (2) x; *M. feistmanteli*, S. China, NONFRIED, p. 90, Ent. Nachr. xviii: n. spp.
- Macronota*: this name must replace *Gymnelis*; KRAATZ, Deutsche e. Z. 1892, p. 375.
- M. pulchella*, Burma, GESTRO, p. 844, Ann. Mus. Genov. (2) x, n. sp.
- Mausoleopsis argentata*, Comores Is., NONFRIED, p. 124, Ent. Nachr. xviii, n. sp.
- Mecinsonota*, n. n. for a part of *Macronota*, auct.; KRAATZ, p. 375, Deutsche e. Z. 1892.
- Metallesthes subpilosa*, Queensland, NONFRIED, Berl. Ent. Zeit. xxxvi, n. sp.
- Microvalgus yilgurnensis*, W. Australia, BLACKBURN, p. 115, P. Linn. Soc. N.S.W. (2) vii, n. sp.
- Mystroceros*: this genus is established on an individual manufactured from two genera; KRAATZ, p. 373, Deutsche e. Z. 1892.
- Oreoderus planicollis*, p. 862, *humilis*, p. 863, *humeralis*, p. 864, *waterhousei*, p. 865, *rufulus*, p. 867, *brevipennis*, p. 868, *maculipennis*, p. 869, Burma, *borneensis*, Sarawak, p. 875, GESTRO, Ann. Mus. Genov. (2) x, n. spp.
- Orythyrea stictica*, metamorphoses; XAMBEU, p. 178, Ann. Soc. L. Lyon, xxxix.
- Pachnodu stehlini*, n. var. *fuliginosa*; NONFRIED, p. 123, Ent. Nachr. xviii.
- P. rossi*, Cameroons, KOLBE, p. 254, SB. nat. Fr. 1892, n. sp.
- Penthima*, n. g., *Macronotidarum*, p. 313, for *P. nigerrima*, n. sp., Java, p. 314, KRAATZ, Deutsche e. Z. 1892.
- Pilinurgus leveillei*, E. India, NONFRIED, p. 372, Berl. Ent. Zeit. xxxvi, n. sp.
- Plasiorrhina triplagiata*, E. Africa, KOLBE, p. 64, SB. nat. Fr. 1892, n. sp.
- Pleuronota*, n. g., *Macronotidarum*, for *P. octomaculata*, n. sp., Java, KRAATZ, p. 312, Deutsche e. Z. 1892.
- Polystalactica sansibarica*, E. Africa, KOLBE, p. 75, SB. nat. Fr. 1892; *P. stipatrix*, p. 132, *contempta*, p. 133, Guinea, KOLBE, S. E. Z. liii: n. spp.
- Pygora lenoc.* (sic) n. var. *brzowskii*, NONFRIED, p. 120, Ent. Nachr. xviii.
- Rhomorrhina flammea*, n. var. *cariana*, GESTRO, p. 837, Ann. Mus. Genov. (2) x.
- Schizorrhina (Diaphonia) suturata*, Thursday Is., Queensland, NONFRIED, p. 370, Berl. Ent. Zeit. xxxvi, n. sp.
- Somalibia*, Lansb. = (*Dolichostethus*, Kolbe); KRAATZ, p. 415, Deutsche e. Z. 1892.
- Stenovalgus*, n. g., near *Microvalgus*, p. 141, for *S. carinulatus*, n. sp., Guinea, KOLBE, p. 142, S. E. Z. liii.
- Stephanocrates*, n. g., near *Compscephalus*, for *S. preussi*, n. sp., Cameroons, KOLBE, p. 240, SB. Nat. Fr. 1892.
- Stephanorrhina*, species tabulated, pp. 145, 147, *S. guttata*, n. var. *hybrida*, *geminata*, KOLBE, pp. 148 & 149, S. E. Z. liii.

- S. temeraria*, p. 150, Cameroons, *haroldi*, Angola, p. 153, KOLBE, S. l. liii, n. spp.
- Teniodera*, varr. of *4-lineata*, *rafflesiana*, *biplagiata*, *antiqua*, and ? Guér., ♀ described; KRAATZ, Deutsche e. Z. 1892, pp. 316-  
*T. quadrilineata*, Hope and allies, synonymy; JANSON, pp. 5: Notes Leyd. Mus. xiv.
- T. rugosicollis*, p. 315, Malacca, *quadristrigata*, Darjeeling, p. 316, p. fig. 9, *borneensis*, Borneo, p. 317, KRAATZ, Deutsche e. Z. 1  
*T. goryi*, Java, p. 58, *virgata*, E. India, p. 59, JANSON, Notes I Mus. xiv : n. spp.
- Taurrhina longiceps*, Guinea, KOLBE, p. 126, S. E. Z. liii, n. sp.
- Tephraea beinlingi*, Zambesi, NONFRIED, p. 124, Ent. Nachr. xviii, n. :  
*Tmesorrhina iris*, n. var. *camerunica*; NONFRIED, p. 120, Ent. N xviii.
- T. alpestris*, p. 249, *barombina*, p. 250, Cameroons, KOLBE, SB. nat 1892, n. spp.
- Trichius fasciatus*, n. var. *albohirtus*; REITTER, p. 152, Wien. ent. Z.
- T. jansonii*, Burma, GESTRO, p. 854, pl. ii, fig. 12, Ann. Mus. Genov x, n. sp.
- Trigonophorus foveiceps*, figured, pl. ii, figs. 7, 8, Ann. Mus. Genov. (  
*T. fovea*, Burma, GESTRO, p. 841, pl. ii, fig. 5, Ann. Mus. Genov. (2) x, :  
*Valgus longulus*, p. 855, *stictopygus*, p. 857, *luctuosus*, p. 858, *tristis*, p. trisinuatus, p. 860, *doriae*, p. 870, *cristatus*, p. 871, Sara beccarii, Celebes, p. 873, *sumatranus*, p. 874, Sumatra, GESTRO, Mus. Genov. (2) x; *V. tibetanus*, Thibet, NONFRIED, p. 372, Ent. Zeit. xxxvi : n. spp.
- Xenogenius*, n. subg. of *Cenochilus*, q.v.; KOLBE, SB. Nat. Fr. 1892, ]

## BUPRESTIDÆ.

- [Cf. BLACKBURN (90, 92, 93, 94, 95), FAIRMAIRE (262, 271), FLEISCH (284), GERMAIN (322), KERREMANS (481 to 489), NONFRIED 647, 648), PÉRINGUEY (672, 673), POLL (696), THÉRY (921), WAHOUSE (988), XAMBEU (1021, 1024).]
- Synonymic catalogue of the family, including 4200 species; KERRE Mem. Soc. Ent. Belg. i.
- Reproduction of descriptions of the early stages, with notes on h &c.; XAMBEU, Rev. d'Ent. xi, pp. 202-252.
- Acmeodero reflexangula, despecta*, distinctions of; REITTER, p. 188, V ent. Z. xi.
- A. bella*, p. 126, *dives*, p. 136, E. Africa, NONFRIED, Ent. Nachr. x  
*A. smaragdina*, Centr. Africa, KERREMANS, p. 56, Ann. Ent. xxxvi; *A. suareola*, p. 42, *fallax*, p. 43, S. W. Africa, PÉRINGUEY S. African Phil. Soc. vi, 2; *A. zambeziana*, Limpopo, PÉRING p. 120, t. c.; *A. interrupta*, Bengal, KERREMANS, p. 175, Ann. Belg. xxxvi : n. spp.

- Edisterna namaqua*, p. 115, *livida*, p. 116, *modesta*, *limbata*, p. 117, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi, 2, n. spp.
- Agrilus sinuatus*, p. 9, *roscidus*, p. 17, metamorphoses; XAMBEU, Mœurs, ii.
- A. cavifrons*, Obock, FAIRMAIRE, p. 100, Rev. d'Ent. xi; *A. niveo-guttatus*, p. 210, *birmanicus*, p. 211, *lafertei*, p. 212, *decoloratus*, p. 213, *villosostriatus*, with var. *carmineus*, p. 214, *imbellis*, *inops*, p. 215, *mandaricus*, p. 216, *mixtus*, p. 217, *ineptus*, *neelgheriensis*, p. 218, E. India, KERREMANS, Ann. Ent. Belg. xxxvi; *A. ostrinus*, p. 819, *agnatus*, p. 820, *modicus*, p. 821, *albopictus*, p. 822, *dianthus*, *nubilus*, p. 823, *inamænus*, p. 824, *livens*, p. 825, Burma, KERREMANS, Ann. Mus. Genov. (2) xii; *A. violaceus*, *cyaneomicans*, S. China, NONFRIED, p. 91, Ent. Nachr. xviii; *A. striatocollis*, Philippines, KERREMANS, p. 24, Ann. Soc. Ent. Fr. lxi; *A. terræreginæ*, Queensland, BLACKBURN, p. 220, Tr. R. Soc. S. Austr. xv : n. spp.
- Amorphosomus pectoralis*, E. India, KERREMANS, p. 210, Ann. Ent. Belg. xxxvi; *A. spathatum*, Burma, KERREMANS, p. 818, Ann. Mus. Genov. (2) xii : n. spp.
- Ancylochira salomonii*, Th., synonymy of; HEYDEN, p. 111, Deutsche e. Z. 1892.
- Anthaxia hypomelæna*, metamorphoses; XAMBEU, p. 190, Ann. Soc. L. Lyon, xxxix. *A. morio*, Herbst., = (*similis*, Saund.); REITTER, p. 136, Wien. ent. Z. xi.
- A. semilimbata*, Amasia, FLEISCHER, p. 200, Wien. ent. Z. xi; *A. obockiana*, Africa, FAIRMAIRE, p. 99, Rev. d'Ent. xi; *A. capitata*, *morosa*, India, KERREMANS, p. 173, Ann. Ent. Belg. xxxvi : n. spp.
- Aphanisticus metallescens*, E. India, KERREMANS, p. 219, Ann. Ent. Belg. xxxvi; *A. cephalicus*, Burma, KERREMANS, p. 826, Ann. Mus. Genov. (2) xii; *A. perraudierei*, Cochin China, POLL, p. 19, Ann. Soc. Ent. Fr. lxi; *A. cupricornis*, New Guinea, KERREMANS, p. 1004, Ann. Mus. Genov. (2) xii : n. spp.
- Astræus simplex*, S. Australia, BLACKBURN, p. 211, Tr. R. Soc. S. Austr. xv, n. sp.
- Belionota sphenopteroides*, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi, 2, p. 43; *B. ignicollis*, Anam, NONFRIED, p. 374, Berl. Ent. Zeit. xxxvi : n. spp.
- Bubastes ragans*, S. Australia, BLACKBURN, p. 213, Tr. R. Soc. S. Austr. xv, n. sp.
- Bubastodes*, n. g., near *Bubastes*, for *B. sulcicollis*, n. sp., S. Australia, BLACKBURN, p. 212, Tr. R. Soc. S. Austr. xv.
- Buprestis impressicollis*, India, KERREMANS, p. 172, Ann. Ent. Belg. xxxvi, n. sp.
- Capnodis tenebrionis*, metamorphoses; XAMBEU, p. 183, Ann. Soc. L. Lyon, xxxix.
- Cutorantha bicolor*, n. var. *cyanura*, KERREMANS, p. 171, Ann. Ent. Belg. xxxvi.



- Chalcogenius viriditarsis*, W. Africa, NONFRIED, p. 125, Ent. N xviii, n. sp.
- Chalcophora patricia*, p. 118, *confusa*, p. 119, S. Africa, PÉRINGUE S. African Phil. Soc. vi (2), n. spp.
- Chalcotenia gigantea*, New Guinea, NONFRIED, p. 374, Berl. Ent. xxxvi; *C. cupreosuturata*, Abyssinia, FAIRMAIRE, p. 101, Rev. xi : n. spp.
- Chrysobothrys nana*, Turkestan, FAIRMAIRE, p. clii, Bull. Soc. Ent. lxi; *C. carinata*, p. 197, *quadraticollis*, p. 198, *violacea*, p. 199, India, KERREMANS, Ann. Ent. Belg. xxxvi : n. spp.
- Chrysochroa limbata*, Borneo, NONFRIED, p. 373, Berl. Ent. Zeit. n. sp.
- Chrysodema navicularis*, p. 21, *violacea*, p. 22, *hebes*, p. 23, Philip KERREMANS, Ann. Soc. Ent. Fr. lxi, n. spp.
- Corabus rubi*, metamorphoses; XAMBEU, Mœurs, ii, p. 15.
- C. dorsalis*, *cæruleus*, p. 200, *cyaneopictus*, p. 201, *chloropictus*, *mod* p. 202, *fulgidiceps*, *amaragdineus*, p. 203, E. India, KERREMANS, Ent. Belg. xxxvi; *C. fœv*, p. 811, *fossulatus*, p. 812, *gestroi*, p. Burma, KERREMANS, Ann. Mus. Genov. (2) xii : n. spp.
- Cryptodactylus cyaneoniger*, p. 207, *scutellaris*, *cuprascens*, p. 209, E. I KERREMANS, Ann. Ent. Belg. xxxvi, n. spp.
- Curis discoidalis*, W. Australia, BLACKBURN, p. 214, Tr. R. Soc. S. A xv, n. sp.
- Cylindromorphus orientalis*, Manilla, KERREMANS, p. 26, Ann. Soc. Fr. lxi, n. sp.
- Cyphogastra plicata*, Philippines, KERREMANS, p. 23, Ann. Soc. Ent. lxi; *C. abdominalis*, Damma I., WATERHOUSE, p. 412, Ann. l (6) x : n. spp.
- Cyria tridens*, Australia, BLACKBURN, p. 41, Tr. R. Soc. S. Austr. n. sp.
- Discoderes quadricornis*, Abyssinia, FAIRMAIRE, p. 100, Rev. d'Ent. n. sp.
- Endelus coraboides*, p. 219, *aureocupreus*, p. 220, E. India, KERREMANS, Ann. Ent. Belg. xxxvi; *E. curtus*, Tenasserim, KERREMANS, p. Ann. Mus. Genov. (2) xii : n. spp.
- Gulbella globosa*, Bengal, KERREMANS, p. 226, Ann. Ent. Belg. x n. sp.
- Hypostigmodera*, n. g., near *Stigmodera*, for *H. variegata*, n. sp., Queensland; BLACKBURN, p. 215, Tr. R. Soc. S. Austr. xv.
- Iridotenia cingulata*, Zanzibar, KERREMANS, p. 51, Ann. Ent. l xxxvi, n. sp.
- Julodis abeillei*, Taurus, THERY, p. cclviii, Bull. Soc. Ent. Fr. lxi
- cyphodera*, Turkestan, FAIRMAIRE, p. clii, Bull. Soc. Ent. Fr. n. spp.
- Melibæus læripennis*, *violaceicollis*, W. Africa, KERREMANS, p. 302, Ann. Soc. Ent. Fr. lxi; *M. indicolus*, p. 204, *chrysomelinus*, *aurarius*, p. E. India, KERREMANS, Ann. Ent. Belg. xxxvi; *M. delauneyi*, l

- POLL, p. 19, Ann. Soc. Ent. Fr. lxi ; *M. transversus*, p. 814, *saundersi* = (*cupricollis*, Saund.), *venustus*, p. 815, *magnificus*, p. 816, Burma, KERREMANS, Ann. Mus. Genov. (2) xii : n. spp.
- Melobasis carulea*, Engano, KERREMANS, p. 1000, Ann. Mus. Genov. (2) xii ; *M. incerta*, *ignicauda*, New Guinea, KERREMANS, p. 1002, Ann. Mus. Genov. (2) xii ; *M. monticola*, p. 496, *beltanensis*, p. 499, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) vi ; *M. subcyanea*, S. Australia, BLACKBURN, p. 288, *op. cit.* (2) vii ; *M. derbyensis*, N. W. Australia, BLACKBURN, p. 44, Tr. R. Soc. S. Austr. xv ; *M. elderi*, Fraser River, BLACKBURN, p. 35, *op. cit.* xvi : n. spp.
- Neocuris* : generic characters ; BLACKBURN, p. 42, Tr. R. Soc. S. Austr. xv.
- N. dilataticollis*, p. 42, *nigricans*, p. 43, N. S. Wales, BLACKBURN, Tr. R. Soc. S. Austr. xvii, n. spp.
- Neobubastes*, n. g., near *Bubastes*, for *N. aureocincta*, n. sp., Centr. Australia ; BLACKBURN, p. 213, Tr. R. Soc. S. Austr. xv.
- Paracuptu celestis*, New Guinea, KERREMANS, p. 1001, Ann. Mus. Genov. (2) xii, n. sp.
- Paratania*, n. g., p. 52, for *P. inornata*, *aspera*, p. 54, *orbicularis*, *simplicicollis*, p. 55, n. spp., W. Africa, and including *Chrysodema chrysoclora*, Pall., and *opuca*, Lansb. : KERREMANS, Ann. Ent. Belg. xxxvi.
- Philanthasia latifrons*, India, KERREMANS, p. 173, Ann. Ent. Belg. xxxvi ; *P. splendida*, Saigon, POLL, Ann. Soc. Ent. Fr. lxi, p. 17 : n. spp.
- Pæcilonota* (*Lampra*) *festiva*, metamorphoses ; XAMBEU, p. 188, Ann. Soc. L. Lyon, xxxix.
- P. magnifica*, Bengal, KERREMANS, p. 171, Ann. Ent. Belg. xxxvi, n. sp.
- Polycesta curta*, Bengal, KERREMANS, p. 174, Ann. Ent. Belg. xxxvi ; *P. paulseni*, Chili, GERMAIN, p. 243, Act. Soc. Chili, ii : n. spp.
- Pseudochrysodema* (?) *walkeri*, Damma I., WATERHOUSE, p. 411, Ann. N. H. (6) x, n. sp.
- Psiloptera stormsi*, Centr. Africa, KERREMANS, p. 56, Ann. Ent. Belg. xxxvi ; *P. hilaris*, S.W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2), p. 41 : n. spp.
- Sambus gibbicollis*, p. 206, *melanoderus*, *nigritus*, p. 207, E. India, KERREMANS, Ann. Ent. Belg. xxxvi ; *S. coloratus*, p. 816, *femoralis*, p. 817, Burma, KERREMANS, Ann. Mus. Genov. (2) xii ; *S. lorix*, New Guinea, KERREMANS, p. 1003, Ann. Mus. Genov. (2) xii : n. spp.
- Sphenoptera potanini*, Jak., = (*procera*, Reit.) ; REITTER, p. 136, Wien. ent. Z. xi.
- S. latescutata*, Turkestan, FAIRMAIRE, p. cliii, Bull. Soc. Ent. Fr. lxi ; *S. leonensis*, W. Africa, p. 137, *nervosa*, Centr. Africa, p. 138, *howa*, Madagascar, p. 139, NONFRIED, Ent. Nachr. xviii ; *S. curta*, p. 180, *impressa*, p. 182, *inocua*, p. 187, *depressa*, *kombirensis*, p. 188, *crebrepunctata*, p. 189, *fulgidiceps*, p. 190, *auricollis*, p. 191, *deducta*, p. 192, *gossypii*, p. 195, E. India, KERREMANS, Ann. Ent. Belg. xxxvi : n. spp.
- Sternocera orissa*, n. var. *modesta*, PÉRINGUEY, p. 40, Tr. S. African Phil. Soc. vi (2), n. sp.

- Stigmodera minuta*, Queensland, p. 44, *septemmaculata*, S. Australia, 1 *skusei*, N. S. Wales, *hostilis*, W. Australia, p. 46, *sternalis*, S. Aust p. 47, *macleayi*, Queensland, *equina*, S. Australia, p. 48, *quadrin* Victoria, p. 49, *dispar*, p. 50, *canaliculata*, Queensland, *arbor* Australia, p. 51, *marcida*, W. Australia, p. 52, *carpentariae*, Qu land, *ornata*, p. 53, *longula*, p. 54, Victoria, BLACKBURN, Tr. R. S. Austr. xv ; *S. cara*, p. 216, *insignis*, *filiformis*, p. 217, *capu regia*, p. 218, *igneae*, p. 219, Australia, BLACKBURN, t. c. ; *S. e* Victoria Desert, BLACKBURN, p. 36, *op. cit.* xvi : n. spp.
- Strigoptera frenchi*, p. 500, *australis*, *marmorata*, p. 501, Australia, BL BURN, P. Linn. Soc. N.S.W. (2) vi, n. spp.
- Trachys fleutiauxi*, Hué, POLL, p. 19, Ann. Soc. Ent. Fr. lxi ; *T. aene* p. 221, *subriolacea*, p. 222, *flaviceps*, *obliqua*, p. 223, *transversa*, b. nata, p. 224, *stigmatica*, *integra*, p. 225, KERREMANS, Ann. Ent. l xxxvi ; *T. penicillata*, p. 827, *virescens*, *lyra*, p. 828, *nigra*, p. *rextator*, *rudis*, p. 830, *polita*, p. 831, Burma, KERREMANS, Ann. Genov. (2) xii ; *T. rugata*, New Guinea, KERREMANS, p. 1005, *T. viridula*, *rufescens*, Philippinae, KERREMANS, p. 25, Ann. Soc. Fr. lxi : n. spp.

#### TEROSCIDÆ, MONOMIDÆ, EUCNEMIDÆ.

[Cf. BLACKBURN (90, 93), ROST (780).]

- Aspathines oratus*, habits ; SCHWARZ, P. E. Soc. Wash. ii, p. 241.
- Drapetes sulcatus*, Caucasus, ROST, Deutsche e. Z. 1892, p. 402, n. sp.
- Dromæolus interioris*, S. Australia, BLACKBURN, p. 502, P. Linn. N.S.W. (2) vi, n. sp.
- Dyscolocerus heros*, N. S. Wales, BLACKBURN, p. 56, Tr. R. Soc. S. A xv, n. sp.

#### ELATERIDÆ.

- [Cf. ANGELL (14), BERG (57), BLACKBURN (90, 92, 93), CANDÈZE (15 156), CASEY (161), FAIRMAIRE (262, 270), FLEUTIAUX (2 FRIVALDSZKY (309), GORHAM (352), PÉRINGUEY (672), REIT (725), SCHWARZ (809, 810, 811).]
- Adelocera carinensis*, *vicina*, Burma, CANDÈZE, p. 772, Ann. Mus. Ge (2) x ; *A. cognata*, Eugano, CANDÈZE, p. 796, *op. cit.* xii : n. spp.
- Adiaphorus modestus*, Bengal, CANDÈZE, p. 488, Ann. Ent. Belg. x3 n. sp.
- Eolus queenslandicus*, N. Queensland, BLACKBURN, p. 296, P. Linn. N.S.W. (2) vii ; *E. pyroblaptus*, Argentine Rep, BERG, p. 61, Soc. Arg. xxxiii : n. spp.
- Agonischius humilis*, p. 493, *limbatus*, p. 494, E. India, CANDÈZE, 1 Ent. Belg. xxxvi ; *A. lætus*, p. 787, *diversus*, *conjugatus*, p. *simpler*, 789, Burma, CANDÈZE, Ann. Mus. Genov. (2) x : n. spp

- Agrypnus fallaciosus, divergens*, Obock, FAIRMAIRE, p. 101, Rev. d'Ent.  
 xi: *A. tuberculatus*, Engano, CANDÈZE, p. 795, Ann. Mus. Genov. (2)  
 xii : n. spp.
- Alaus mahenus*, Seychelles, FAIRMAIRE, p. cli, Bull. Soc. Ent. Fr. lxi;  
*A. modiglianii*, Engano, CANDÈZE, p. 797, Ann. Mus. Genov. (2) xii;  
*A. lorix*, New Guinea, CANDÈZE, p. 802, t. c. : n. spp.
- Anchastus bengalensis*, India, CANDÈZE, p. 490, Ann. Ent. Belg. xxxvi;  
*A. insulsus*, New Guinea, CANDÈZE, p. 804, Ann. Mus. Genov. (2)  
 xii : n. spp.
- Aptopus birmanicus*, Burma, CANDÈZE, p. 781, Ann. Mus. Genov. (2) x,  
 n. sp.
- Athous olbiensis*, = (*chamboreti*); BUYSSON, p. xxiv, Bull. Soc. Ent. Fr.  
 lxi. *A. proximus* and *spectabilis*, Hampe, are one species; KRAATZ,  
 p. 176, Deutsche e. Z. 1892.
- A. sanguinicollis*, Japan, FRIVALDSZKY, p. 124, Term. füzetek, xv,  
 n. sp.
- Campsoaternus pasteuri*, Nias Is., CANDÈZE, Notes Leyd. Mus. xiv, f. 9,  
 n. sp.
- Cardiophorus rufipes*, n. var. *persicus*; SCHWARZ, p. 384, Deutsche e. Z.  
 1892.
- C. analis*, Asia Minor, *pellitus*, Turkestan, SCHWARZ, Deutsche e. Z.  
 1892; *C. macer*, Bengal, CANDÈZE, p. 493, Ann. Ent. Belg. xxxvi;  
*C. seminalis*, Burma, CANDÈZE, p. 778, Ann. Mus. Genov. (2) x;  
*C. victoriensis, eucalypti*, Australia, BLACKBURN, P. Linn. Soc. N.S.W.  
 (2) vi, p. : n. spp.
- Cardiotarsus antennalis*, Burma, CANDÈZE, p. 780, Ann. Mus. Genov. (2)  
 x, n. sp.
- Chalcolepidius apacheanus*, Arizona, CASEY, Ann. N. York Ac. vi, p. 16,  
 n. sp.
- Corymbites cirens*, n. var. *stramineus*; CANDÈZE, p. 228, Ann. Ent. Belg.  
 xxxvi. *C. caricinus, umbricola, lobatus*, characters of; HAMILTON,  
 p. 296, Canad. Ent. xxiv.
- C. infirmus*, Siberia, REITTER, p. 152, Wien. ent. Z. xi; *C. weidtii*, British  
 Columbia, ANGELL, p. 84, Ent. News, iii : n. spp.
- Cryptohypnus sericeus*, p. 490, *pictus*, p. 491, E. India, CANDÈZE, Ann. Ent.  
 Belg. xxxvi, n. spp.
- Dactylophysus*, n. g., p. 408, for *D. mendax*, n. sp., Brazil, p. 410, and  
 including *Heterocrepidius tibialis*, Cand.; FLEUTIAUX, Ann. Soc.  
 Ent. Fr. lxi.
- Diploconus rufulus*, p. 781, *nutritus, ornatus, serricornis*, p. 782, Burma,  
 CANDÈZE, Ann. Mus. Genov. (2) x; *D. enganensis*, Engano, CAN-  
 DÈZE, p. 799, op. cit. xii : n. spp.
- Elater miniatus* (= *pomona*, auct., nec Steph.), England, GORHAM, Ent.  
 xxv, p. 304; *E. wentworthensis*, N. S. Wales, BLACKBURN, p. 297,  
 P. Linn. Soc. N.S.W. (2) vii : n. spp.
- Glypheus alpinus*, Victoria, BLACKBURN, p. 290, P. Linn. Soc. N.S.W. (2)  
 vii, n. sp.

- Glyphochilus montanus*, N. S. Wales, BLACKBURN, p. 293, P. Linn. N.S.W. (2) vii, n. sp.
- Glyphonyx suturalis*, Bengal, CANDÈZE, p. 494, Ann. Ent. Belg. 3  
*G. correctus*, Burma, CANDÈZE, p. 789, Ann. Mus. Genov. (2) x, n. spp.
- Hemirrhaphes ruficollis*, Bengal, CANDÈZE, p. 491, Ann. Ent. xxxvi, n. sp.
- Heteroderes canus*, Bengal, CANDÈZE, p. 489, Ann. Ent. Belg. n. sp.
- Lacon senilis*, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. p. 44; *L. tabularius*, Bengal, CANDÈZE, p. 483, Ann. Ent. xxxvi; *L. collisus*, p. 772, *gypsatus*, p. 773, *hilaris*, *subcostatus*, Burma, CANDÈZE, Ann. Mus. Genov. (2) x; *L. indutissimus*, E. CANDÈZE, p. 797, *op. cit.* xii; *L. pupillus*, New Guinea, CA. p. 802, *t. c.*; *L. brightensis*, p. 503, *murrayensis*, *lindensis*, 1 *adelaidæ*, p. 505, *duplex*, p. 506, *eucalypti*, p. 507, *andersoni*, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) vi; *L. mar* p. 288, *squalescens*, *ylgarnensis*, p. 289, Australia, BLACKBURN, vii : n. spp.
- Ludius clavus*, Burma, CANDÈZE, p. 786, Ann. Mus. Genov. (2) x, 1  
*Megapenthes aspernendus*, Bengal, CANDÈZE, p. 489, Ann. Ent. xxxvi; *M. litteratus*, Java, *remotus*, Celebes, CANDÈZE, p. 10; Leyd. Mus. xi; *M. musicatus*, Engano, CANDÈZE, p. 798, Ann. Genov. (2) xii; *M. brunniventris*, New Guinea, CANDÈZE, 1 *t. c.* : n. spp.
- Melanotus* : revision of the palaearctic species; SCHWARZ, pp. 14 pl. ii, Deutsche e. Z. 1892.
- M. kraatzi*, Greece, p. 155, *humilis*, Alai Mts., p. 156, *fragilis*, Tur. p. 160, *brunnicornis*, China, p. 164; SCHWARZ, Deutsche e. Z. 18 *repletus*, p. 783, *comatus*, *conicus*, p. 784, Burma, CANDÈZE, Ann. Genov. (2) x; *M. hericius*, Engano, CANDÈZE, p. 800, *op. c.* n. spp.
- Melanoxanthus anticus*, Bengal, CANDÈZE, p. 490, Ann. Ent. Belg. 3  
*M. virgatus*, p. 777, *punctum*, p. 778, Burma, CANDÈZE, Ann. Genov. (2) x; *M. palliatus*, *sexguttatus*, Engano, CANDÈZE, *t. c.* : n. spp.
- Meristhus indecorus*, Bengal, CANDÈZE, p. 485, Ann. Ent. Belg. n. sp.
- Monocrepidius mitigatus*, Engano, CANDÈZE, p. 798, Ann. Mus. Ger. xii; *M. dinjunctus*, New Guinea, CANDÈZE, p. 803, *t. c.*; *M. ru* p. 509, *frontalis*, p. 510, *alpicola*, p. 511, *macleayi*, p. 512, *ove* *baldiensis*, p. 514, Australia, BLACKBURN, P. Linn. Soc. N.S. vi; *M. ingens*, p. 291, *terræregina*, p. 292, *picicollis*, narra p. 293, *mentitor*, p. 294, *olliffi*, p. 295, Australia, BLACKBURN, vii : n. spp.
- Otocryptus*, n. g., forming a new group *Otocryptites*, p. 486, for *O. c.* n. sp., Bengal; CANDÈZE, Ann. Ent. Belg. xxxvi.

- Pantolamprus ovampo*, S.W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2) p. 45, n. sp.  
*Penia plagiata*, Burma, CANDÈZE, p. 786, Ann. Mus. Genov. (2) x, n. sp.  
*Pericus discedens*, Bengal, CANDÈZE, p. 485, Ann. Ent. Belg. xxxvi, n. sp.  
*Physodactylus foreatostratus*, p. 406, *oberthuri*, *niger*, p. 407, *brasiliensis*, p. 408, Brazil, FLEUTIAUX, Ann. Soc. Ent. Fr. lxi, n. spp.  
*Silenis infectus*, p. 494, *nigriceps*, p. 495, Bengal, CANDÈZE, Ann. Ent. Belg. xxxvi, n. spp.  
*Singhalenus gibbus*, Bengal, CANDÈZE, p. 487, Ann. Ent. Belg. xxxvi, n. sp.  
*Spheniscosomus*, n. g., for a part of *Melanotus*; SCHWARZ, p. 132, Wien. ent. Z. xi.  
*Telasena*, n. g., *Physodactylini*, for *Anelustes femoralis*, Luc.; FLEUTIAUX, p. 410, Ann. Soc. Ent. Fr. lxi.

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- [Cf. BLACKBURN (90, 92), BOURGEOIS (113).]  
*Dascillus calvescens, ruforillosus*, Bengal, BOURGEOIS, p. 234, Ann. Ent. Belg. xxxvi, n. spp.  
*Helodes princeps*, p. 517, *cinctus, olliffi*, p. 518, *montivagans*, p. 519, *H. (Cyphon?) pictus, ovensensis, frater*, p. 520, *adelaidæ, spilotus*, p. 521, *lindensis*, p. 522, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) vi; *H. (Cyphon) fenestratus*, N. S. Wales, BLACKBURN, *op. cit.* vii : n. spp.  
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*Scirtes helmsi*, Victoria, BLACKBURN, p. 524, P. Linn. Soc. N.S.W. (2) vi, n. sp.

## MALACODERMATA.

- [Cf. BLACKBURN (90, 94, 95), BOURGEOIS (112, 113, 114, 210), GESTRO (326, 329, 334), GORHAM (210, 350), OLIVIER (652, 653), PÉRINGUEY (672), WEISE (1000).]  
List of *Lycidæ* of Borneo; BOURGEOIS, p. 42, Notes Leyd. Mus. xiv.  
*Calochromus*: the structure of max. palpi differs sexually; BLACKBURN, p. 528, P. Linn. Soc. N.S.W. (2) vi.  
*Chauliognathus marginatus*, eggs and oviposition; RILEY, p. 186, Canad. Ent. xxiv.  
*Cladophorus (Odontocerus) flabellifer*, p. 496, *sellatus, beccarii*, p. 498, *quadraticollis, pectinatus*, p. 500, *dorsalis*, p. 501, New Guinea, *diabolicus*, Amboyna, *belzebuth*, p. 502, *stygius, infernalis*, p. 503, *acheronticus*, p. 504, *pallidulus, parallelus*, p. 505, *rubentipes*, p. 506, *mandibularis*, p. 507, *ornaticollis*, p. 508, *tibialis, rufithorax*, p. 509, *dimidiatus*, p. 510, *septemareolatus*, p. 511, *papuensis*, p. 512, *acutangulus, obsoletus*, p. 513, New Guinea, BOURGEOIS, Ann. Mus. Genov. (2) xii, n. spp.  
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- Dasytes squirensis, helmsi*, Australia, BLACKBURN, p. 38, Tr. R. Soc. S. Austr. xvi, n. spp.
- Diaphanes mendax*, p. 597, *plagiator*, p. 598, Burma, OLIVIER, Ann. Mus. Genov. (2) x ; *D. apicalis*, Borneo, GORHAM, p. 89, pl. iv, fig. 8, P. Z. S. 1892 : n. spp.
- Ditua nigricornis*, p. 514, *alternata, flaviceps*, p. 515, New Guinea, BOURGEOIS, Ann. Mus. Genov. (2) xii, n. spp.
- Ellychnia californica*, pupa noticed ; WICKHAM, p. 201, Bull. Lab. Iowa, ii.
- Hapalochrus opulentus*, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2), p. 46, n. sp.
- Hedybius amœnus*, Transvaal, GORHAM in Distant, Naturalist Transvaal, p. 197, pl. i, fig. 2, n. sp.
- Heteromastix anticus*, p. 221, *dilataticollis*, p. 222, N. S. Wales, BLACKBURN, Tr. R. Soc. S. Austr. xv, n. spp.
- Ichthyurus urosipilus*, p. 561, *luctuosus*, p. 562, *feæ*, p. 564, *longicauda*, p. 566, *nigromaculatus*, p. 569, *montanus*, p. 571, *nigriceps*, p. 573, *agilis*, p. 574, *spinicrus*, p. 576, *pallidus*, p. 578, *vittatus*, p. 579, *laniger*, p. 581, *propomacrus*, p. 583, *ritsemæ*, p. 588, *crassicauda*, p. 589, *laticauda*, p. 590, Burma, GESTRO, Ann. Mus. Genov. (2) x ; *I. bourgeoisii*, China, p. 1023, *mouhoti*, p. 1025, *hirundo*, p. 1026, *obscurus*, p. 1028, Siam, *vandepollii*, China, p. 1029, *wallacei*, Singapore, p. 1031, *borneensis*, p. 1032, Borneo, *insularis*, p. 1033, *curvicauda*, p. 1035, *pachygaster*, p. 1036, Singapore, *macrurus*, Cochin China, p. 1037, *davidii*, Kiang-Si, p. 1038, *oberthurii*, Burma, p. 1039, *malayanus*, Java, p. 1041, *melanospilus*, Sylhet, p. 1042, *lucassenii*, Borneo, p. 1043, *beccarii*, Sumatra, p. 1045, *abnormis*, Darjeeling, p. 1046, *afer*, Niger, p. 1047, GESTRO, t. c. : n. spp.
- Idgia flavibuccis*, Bengal, BOURGEOIS, p. 237, Ann. Ent. Belg. xxxvi, n. sp.
- Lixius femoralis, eyrensis*, p. 531, *pretiosus*, p. 532, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) vii, n. spp.
- Lamprophorus morator*, Burma, OLIVIER, p. 596, Ann. Mus. Genov. (2) x, n. sp.
- Lampyris bicarinata*, Muls., note on ; OLIVIER, Bull. Soc. Ent. Fr. lxi, p. xlv.
- Luciola æmula*, p. 601, *seriata*, p. 602, *ægrola*, p. 603, *abscondita*, p. 604, Burma, OLIVIER, Ann. Mus. Genov. (2) x ; *L. cribellata*, p. 1010, *pupilla*, 1011, New Guinea, OLIVIER, t. c., n. spp.
- Lycus distantii*, Transvaal, BOURGEOIS in Distant, Naturalist Transvaal, p. 196, pl. i, fig. 3, n. sp.
- Malachius*, internal structure of apices of elytra ; HOFFBAUER (405). *M. inornatus*, metamorphoses ; XAMBEU, Mœurs, ii, p. 44, and Le Nat. 1892, p. 157.
- Maltharchus*, n. g. for *Malthodes brevicollis* and allies ; WEISE, p. 408, Deutsche z. Z. 1892.
- Malthodes* : characters of the French species with figures ; BOURGEOIS, Faune gallo-rhenane, pp. 173-203.

- M. caudatus*, Carinthia, WEISE, p. 410, Deutsche e. Z. 1892, n. sp.  
*Metriorhynchus gigas*, p. 524, *semicostatus*, p. 525, *monticola*, *occidentalis*, p. 526, *letus*, p. 527, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) vi, n. spp.  
*Phengodes laticollis*, ♀ noticed; RILEY & ULKE, P. E. Soc. Wash. ii, p. 227.  
*Plateros? cribripennis*, Bengal, BOURGEOIS, p. 236, Ann. Ent. Belg. xxxvi, n. sp.  
*Pyrocalia lampyroides*, p. 598, *microceras*, *cribripennis*, p. 599, *feai*, p. 600, Burma, OLIVIER, Ann. Mus. Genov. (2) x; *P. collaris*, Borneo, GORHAM, p. 89, pl. iv, fig. 7, P. Z. S. 1892 : n. spp.  
*Rhagonycha nigripes*, metamorphoses; XAMBEU, p. 28, Mœurs, ii.  
*Selasia robecchii*, Somaliland, GESTRO, p. 759, Ann. Mus. Genov. (2) xii, n. sp.  
*Selenurus variegatus*, p. 220, *sydneyanus*, p. 221, N. S. Wales, BLACKBURN, Tr. R. Soc. N.S.W. xv, n. spp.  
*Silis australis*, S. Australia, BLACKBURN, p. 530, P. Linn. Soc. N.S.W. (2) vi, n. sp.  
*Telephorus victoriensis*, p. 528, *guleatus*, *fusicornis*, p. 529, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) vi, n. spp.  
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*Vesta aurantiaca*, figured, pl. iv, fig. 9, noticed, p. 89, GORHAM, P. Z. S. 1892.  
*Xylobanus reticulatus*, figured, pl. iv, fig. 6, P. Z. S. 1892.  
*X. ritsemæ*, Borneo, BOURGEOIS, p. 39, Notes Leyd. Mus. xiv, n. sp.

## CLERIDÆ.

- [Cf. ABEILLE (2), BLACKBURN (94), DUVIVIER (231), ESCHERICH (259), FAIRMAIRE (262, 263), GESTRO (334), GORHAM (349), LEWIS (556).]  
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*Cladiscus obeliscus*, Japan, LEWIS, p. 185, Ann. N. H. (6) x, n. sp.  
*Denops plagiatu*s, Obock, FAIRMAIRE, p. 102, Rev. d'Ent. xi, n. sp.  
*Isoclerus*, n. g., near *Thaneroclerus*, for *I. pictus*, n. sp., Japan; LEWIS, Ann. N. H. (6) x, p. 191.  
*Lemidia pictipes*, *simulans*, p. 222, *munda*, *soror*, *pulchella*, p. 223, *angustula*, *leoparda*, p. 224, Australia, BLACKBURN, Tr. R. Soc. S. Austr. xv, n. spp.  
*Lyctosoma*, n. g., near *Thaneroclerus*, for *L. parallelum*, n. sp., Japan; LEWIS, p. 192, Ann. N. H. (6) x.  
*Neoclerus*, n. g., near *Thaneroclerus*, for *N. ornatulus*, n. sp., Japan; LEWIS, p. 190, Ann. N. H. (6) x.  
*Neohydnius*, n. g., near *Hydnocera*, p. 742, for *N. despectus*, n. sp., Burma, p. 743; GORHAM, Ann. Mus. Genov. (2) xii.



- Nothepus*, n. g., *Tillides*, p. 719, for *N. conicicollis*, n. sp., Burma, I GORHAM, Ann. Mus. Genov. (2) xii.
- Omnadius parviceps*, p. 741, *tricinctus*, p. 742, Burma, GORHAM, Ann. Genov. (2) xii ; *O. nigromaculatus*, Japan, LEWIS, p. 187, Ann. (6) x : n. spp.
- Opetiopalpus karenicus*, Burma, GORHAM, p. 746, Ann. Mus. Ger. xii, n. sp.
- Opilo foreicollis*, Algeria, ABEILLE, p. cccxxvi, Bull. Soc. Ent. I  
*O. mirus*, Somaliland, GESTRO, p. 761, Ann. Mus. Genov. (2) xii ;  
*O. hypocaustus*, Burma, GORHAM, p. 730, t. c. ; *O. longipilis*, FAIRMAIRE, p. 105, Rev. d'Ent. xi ; *O. carinatus*, *niponicus*, LEWIS, p. 186, Ann. N. H. (6) x : n. spp.
- Orthopleura funebris*, Syria, FAIRMAIRE, p. 148, Ann. Ent. Belg. xxxv  
*Orthrius fea*, p. 736, *tarsalis*, p. 737, Burma, GORHAM, Ann. Mus. (2) xii, n. spp.
- Pelonium lividum*, p. 744, *discrepens*, p. 745, Burma, GORHAM, Ann. Genov. (2) xii, n. spp.
- Phlaeocopus mediozonatus*, Obock, FAIRMAIRE, p. 103, Rev. d'Ent. x  
*Pseudachlamys*, n. g., p. 297, for *P. penicillatus*, n. sp., Congo, I DUVIVIER, Ann. Ent. Belg. xxxvi.
- Spinoza*, n. g., near *Cymatodera*, p. 184, for *S. caerulea*, n. sp., p. 185, LEWIS, Ann. N. H. (6) x.
- Stigmatium obockianum*, Africa, FAIRMAIRE, p. 103, Rev. d'Ent. x  
*S. birmanicum*, Burma, GORHAM, p. 740, Ann. Mus. Genov. (2) xii, n. spp.
- Tenerus biplagiatus*, Obock, FAIRMAIRE, p. 104, Rev. d'Ent. x  
*cyaneus*, *maculicollis*, *higonius*, Japan, LEWIS, p. 189, Ann. (6) x : n. spp.
- Thanasimus nigricollis*, *albomaculatus*, Japan, LEWIS, p. 187, Ann. (6) x, n. spp.
- Thaneroclerus quinquemaculatus*, Burma, GORHAM, p. 738, Ann. Genov. (2) xii ; *T. aino*, Japan, LEWIS, p. 190, Ann. N. H. (6) x, n. spp.
- Tillicera cleroides*, p. 731, *bibalteata*, p. 732, Burma, GORHAM, Ann. Genov. (2) xii : n. spp.
- Tillus notatus*, Kl., = (*lewisi*, Kies.) ; LEWIS, p. 185, Ann. N. H. (6) x, n. spp.
- T. pectinicornis*, Syria, ABEILLE, p. cccxxvi, Bull. Soc. Ent. (2) xii ;  
*T. birmanicus*, Bhamo, GORHAM, p. 729, Ann. Mus. Genov. (2) xii, n. spp.
- Trichodes sipylus* and allies, synonymy ; ESCHERICH, p. 244, ent. Z. xi ; *T. syriacus* and allies, synonymy ; ESCHERICH, Soc. Ent. vii.
- T. suspectus*, Syria, p. 226, *pulcherrimus*, Persia, p. 227, *maxim*  
*junctus*, Syria, p. 229, *heydeni*, Caucasus, p. 230, ESCHERICH, ent. Z. xi, n. spp.
- Xenorthrius*, n. g., p. 733, for *X. mouhoti*, p. 734, *subfasciatus*, Burma, p. 735, n. spp., Burma ; GORHAM, Ann. Mus. Genov. (2) xii.

## BOSTRYCHIDÆ, PTINIDÆ, CIOIDÆ.

[Cf. CASEY (161), BLACKBURN (95), FAIRMAIRE (262, 264), FRIVALDSZKY (309), GERMAIN (322), XAMBEU (1023).]

Notes on the *Anobiidæ* of Chili; GERMAIN, pp. 254–259, Act. Soc. Chili, ii.

*Apate rufo-coronata*, Obock, FAIRMAIRE, p. 104, Rev. d'Ent. xi, n. sp.

*Bostrichus sulcicollis*, structural peculiarities and generic position discussed; GERMAIN, p. 259, Act. Soc. Chili, ii.

*Calymmoderus*, recharacterised; GERMAIN, p. 258, Act. Soc. Chili, ii.

*Diplocotes niger*, Poll, and *Diphobia familiaris*, Olliff, are one species; BLACKBURN, p. 300, P. Linn. Soc. N.S.W. (2) vii.

*Dysides plutensis*, Argentine Rep., FAIRMAIRE, p. 245, Ann. Ent. Belg. xxxvi, n. sp.

*Lyctus carolinæ*, p. 13, *californicus*, p. 14, *curtulus*, p. 15, N. America, CASEY, Ann. N. York Ac. vi, n. spp.

*Ocelliger*, Phil., = (*Eurhopalus*, Sol.); GERMAIN, p. 254, Act. Soc. Chili, ii.

*Pachotelus fuscus*, Sol., = (*Anobium hæmorrhoidale*, Phil.); GERMAIN, p. 256, Act. Soc. Chili, ii.

*Ptinus sexpunctatus*, metamorphoses; XAMBEU, p. 36, Mœurs, ii, and NICOLAS, Échange, 1892, p. 143, pl. *P. brunneus*, metamorphoses; XAMBEU, Mœurs, ii, p. 42.

*P. senilis*, Obock, FAIRMAIRE, p. 105, Rev. d'Ent. xi, n. sp.

*Sitodrepa panicea*, habits; ROTH, Ent. Tidskr. xiii, p. 254.

*Trogozylon* merged in *Lyctus*; CASEY, p. 12, Ann. N. York Ac. vi.

*Xyletinus (Calypsterus) chinensis*, China, FRIVALDSZKY, p. 124, Term. füzetek, xv, n. sp.

*Xylopertha pustulata*, metamorphoses; XAMBEU, p. 66, Le Nat. 1892.

*X. vidua*, note on; BLACKBURN, p. 39, Tr. R. Soc. S. Austr. xvi.

*X. hexacantha*, Argentine Rep., FAIRMAIRE, p. 245, Ann. Ent. Belg. xxxvi, n. sp.

## TENEBRIONIDÆ.

[Cf. ALLUAUD (8), BLACKBURN (90, 94, 95), BLAISDELL (98), CASEY (161, 162), CHAMPION (347), DISTANT (210), DUVIVIER (230), FAIRMAIRE (261, 262, 263, 264, 265, 267), GESTRO (334), HEYDEN (402), PÉRINGUEY (672, 673), REITTER (725, 726), SENAC (836), ZOUFAL (1026).]

Notes on habits of *Tenebrionidæ* of San Diego; BLAISDELL, Zoe, iii, pp. 102–108.

*Abantia*, n. gen. near *Clitobius*, p. 109, for *A. ænescens*, n. sp., Obock, p. 110; FAIRMAIRE, Rev. d'Ent. xi.

*Acotulus* (sub *Orthocerus*) *funicornis*, Bed., = (*oraniensis*, Reit.); REITTER, p. 26, Wien. ent. Z. xi.

*Acropteron magnicolle*, Venezuela, FAIRMAIRE, p. 90, Ann. Soc. Ent. Fr. lxi, n. sp.

- Adelium parallelum*, Germ., referred to *Seirotana*; BLACKBURN, p. 5 P. Linn. Soc. N.S.W. (2) vi.
- A. simplex*, Australia, BLACKBURN, p. 44, Tr. B. Soc. S. Austr. xvi; *pustulosum*, p. 534, *victoriae*, p. 535, *inconspicuum*, *alpicola*, p. 5 *tropicum*, p. 537, *lindense*, *angulatum*, p. 538, *æquale*, p. 5 Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) vi : n. spp.
- Adesmia leucosticta*, p. 765, *nobilis*, p. 766, Somaliland, GESTRO, A Mus. Genov. (2) xii; *A. (Onymachris) agilis*, S. Africa, PÉRINGU Tr. S. African Phil. Soc. vi (2), p. 120 : n. spp.
- Alaphus macilentus*, Arizona, CASEY, p. 61, Ann. N. York Ac. vi, n. sp
- Amarygmus natalensis*, S. W. Africa, PÉRINGUEY, Tr. S. African P Soc. vi (2), p. 59, n. sp.
- Ambigatus*, n. g., near *Melanophorus*, for *A. rufonitens*, p. 246, *strictico bembidioides*, p. 247, n. spp., Argentine Rep.; FAIRMAIRE, Ann. I Belg. xxxvi.
- Amiantus undulosus*, Transvaal, DISTANT, Naturalist Transvaal, p. 199, fig. 1, n. sp.
- Anædus posticalis*, Venezuela, FAIRMAIRE, p. 89, Ann. Soc. Ent. Fr. n. sp.
- Anepsius montanus*, Colorado, CASEY, p. 55, Ann. N. York Ac. n. sp.
- Aræoschizus mexicanus*, Tepetlapa, CHAMPION, p. 491, pl. xxii, fig Biol. Centr. Am. Col. iv (1), n. sp.
- Argoporis rufipes*, = (*nitida*, Casey); CHAMPION, p. 518, Biol. Centr. Col. iv (1).
- A. unicalcurata*, *tridentata*, p. 519, *laricollis*, p. 520, Mexico, CHAM t. c., n. spp.
- Arthrodeis byrrhiformis*, Obock, FAIRMAIRE, p. 106, Rev. d'Ent. xi *plicatus*, Somaliland, GESTRO, p. 764, Ann. Mus. Genov. (2) n. spp.
- Argenis minor*, Argentine Rep., FAIRMAIRE, p. 251, Ann. Ent. xxxvi, n. sp.
- Asida*: note on the Central American allies or subgenera, p. *A. sordida*, = (*rugosissima*, *interrupta*), *clathrata*, = (*fun* p. 492, *fallax*, = (*fuscata*, *similata*), p. 496, *A. collaris*, n. n *marginicollis*, Champ., *nec* Rosenh., p. 499; CHAMPION, Biol. C Am. Col. iv (1).
- Asida geminata*, p. 492, pl. xxii, fig. 8, *intricata*, p. 493, fig. 9, *spinin* fig. 11, p. 494, *tenebrosa*, fig. 12, *fasciculata*, fig. 21, p. 495, fig. 10, p. 496, *moricoidea*, fig. 14, *segregata*, p. 497, *fæda*, fig. 17, p. 498, *furcata*, fig. 15, p. 499, *latissima*, fig. 18, *ho* fig. 13, p. 500, *unicostata*, fig. 19, p. 501, *ingens*, fig. 20, p. 503, M CHAMPION, t. c., n. spp.
- Astrotus undatus*, pl. xxii, fig. 25, *erosus*, p. 504, *nosodermoides*, f fig. 22, Mexico, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.
- Azarelius*, n. g., near *Gonocnemis*, for *A. sculpticollis*, n. sp., Suu FAIRMAIRE, p. vii, Bull. Soc. Ent. Fr. lxi.

- Blapstinus coronadensis*, California, BLAISDELL, p. 242, Ent. News, iii ; *B. opatrinoides*, *pseudocæneus*, p. 81, *piliferus*, *infimus*, p. 82, Venezuela, FAIRMAIRE, Ann. Soc. Ent. Fr. lxi : n. spp.
- Blepegenes nitidus*, Queensland, BLACKBURN, p. 533, P. Linn. Soc. N.S.W. (2) vi, n. sp.
- Branchus opatroides*, Mexico, CHAMPION, p. 507, pl. xxii, fig. 24, Biol. Centr. Am. Col. iv (1), n. sp.
- Calymnus longedentatus*, Venezuela, FAIRMAIRE, p. 83, Ann. Soc. Ent. Fr. lxi, n. sp.
- Capnisa cribratella*, Turkestan, FAIRMAIRE, p. cliii, Bull. Soc. Ent. Fr. lxi, n. sp.
- Carchares*, Pasc., = (*Podoces*, Per.) ; PÉRINGUEY, p. 135, Tr. S. African Phil. Soc. vi, 2.
- Cardigenius densegranatus*, Argentine Rep., FAIRMAIRE, p. 246, Ann. Ent. Belg. xxxvi, n. sp.
- Cardiothorax æripennis*, N. S. Wales, BLACKBURN, p. 226, Tr. R. Soc. S. Austr. xv, n. sp.
- Catamerus fairmairei*, Tabora, ALLUAUD, p. cxxxix, Bull. Soc. Ent. Fr. lxi ; *C. transvaalensis*, S. Africa, PÉRINGUEY, p. 125, Tr. S. African Phil. Soc. vi, 2 : n. spp.
- Cataphronetis soror*, Obock, FAIRMAIRE, p. 110, Rev. d'Ent. xi, n. sp.
- Centrioptera spiculosa*, Mexico, CHAMPION, p. 508, Biol. Centr. Am. Col. iv (1), n. sp.
- Centronopus bimaculatus*, Mexico, CHAMPION, p. 521, pl. xxiii, fig. 1, Biol. Centr. Am. Col. iv (1), n. sp.
- Chalcopterus eremita*, p. 44, *meyricki*, p. 45, W. Australia, BLACKBURN, Tr. R. Soc. S. Austr. xvi, n. spp.
- Chartopteryx victoriensis*, Australia, BLACKBURN, p. 226, Tr. R. Soc. S. Austr. xv, n. sp.
- Choaspes simonis*, Venezuela, FAIRMAIRE, p. 80, Ann. Soc. Ent. Fr. lxi, n. sp.
- Cibdelis lævigata*, California, CASEY, p. 60, Ann. N. York Ac. vi, n. sp.
- Clitobius læripennis*, Obock, *strongyloides*, Zambesi, FAIRMAIRE, p. 111, Rev. d'Ent. xi, n. spp.
- Colpotus magnicollis*, Syria, FAIRMAIRE, p. 148, Ann. Ent. Belg. xxxvi, n. sp.
- Conibiosoma laciniata*, Arizona, CASEY, p. 64, Ann. N. York Ac. vi, n. sp.
- Cryptoglossa granulifera*, Mexico, CHAMPION, p. 508, Biol. Centr. Am. Col. iv (1), n. sp.
- Cyclosattus*, n. g., for *Eusattus websteri* (n. sp. *infra*) ; CASEY, p. 710, Ann. N. York Ac. vi.
- Cyrtosoma oblongulum*, *impressipenne*, Venezuela, FAIRMAIRE, p. 89, Ann. Soc. Ent. Fr. lxi, n. spp.
- Dædrosia victoriae*, Australia, BLACKBURN, p. 533, P. Linn. Soc. N.S.W. (2) vi ; *D. monticola*, N. S. Wales, BLACKBURN, p. 227, Tr. R. Soc. S. Austr. xv : n. spp.

- Diastolinus brevicollis*, p. 80, *impressicollis*, p. 81, Venezuela, FAIRMAIRE, Ann. Soc. Ent. Fr. lxi, n. spp.
- Dichtrethus angustipennis*, S. W. Africa, PÉRINGUEY, Tr. S. African P. Soc. vi (2), p. 52, n. sp.
- Elæodes eschscholtzi*, = (*wickhami*); CHAMPION, p. 511, Biol. Centr. Am. Col. iv (1).
- Elæodes interrupta*, California, BLAISDELL, Ent. News, iii, p. 241; *rileyi*, p. 57, *nitidus*, Arizona, *compositus*, Texas, p. 58, CASEY, Ann. N. York Ac. vi; *E. macrura*, p. 511, *polita*, *segregata*, p. 513, *ol* p. 516, *peropaca*, *tesellata*, p. 517, Mexico, CHAMPION, Biol. Centr. Am. Col. iv (1) : n. spp.
- Emmenastus belli*, = (*rotundicollis* and *intermedius*), p. 480, *alatus*, (*salvini*), p. 482; CHAMPION, Biol. Centr. Am. Col. iv (1).
- E. mexicanus*, *subapterus*, p. 481, *seriatus*, *constrictus*, p. 482, *stoli* p. 483, *igualensis*, p. 484, Mexico, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.
- Emyon scabrosus*, S. W. Africa, PÉRINGUEY, p. 58, Tr. S. African P. Soc. vi (2), n. sp.
- Epairops levigata*, *variegata*, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2), p. 55, n. spp.
- Epitragodes julichi*, Texas, CASEY, p. 55, Ann. N. York Ac. vi, n. sp.
- Epitragus*: tabulation of the N. American species; CASEY, p. 53, Ann. N. York Ac. vi. *E. canus*, figured and noticed, p. 487, pl. 5, fig. 5, *E. rorulentus*, = (*scutatus*), p. 486; CHAMPION, Biol. Centr. Am. Col. iv (1).
- E. cristatus*, p. 485, Mexico, pl. xxii, fig. 4, *ruatanensis*, Honduras, p. 486, CHAMPION, Biol. Centr. Am. Col. iv (1); *E. restitus*, Arizona, CASEY, p. 53, Ann. N. York Ac. vi; *E. purumpunctatus*, p. 78, *angustifor* p. 79, Venezuela, FAIRMAIRE, Ann. Soc. Ent. Fr. lxi; *E. ær* *rufocastaneus*, p. 247, *nitidicollis*, *crassus*, p. 248, *nanus*, Argentinia, *minutissimus*, p. 249, Brazil, FAIRMAIRE, Ann. Ent. Belg. xxxi, n. spp.
- Eulabis laticornis*, California, CASEY, p. 59, Ann. N. York Ac. vi, n. spp.
- Eusattus websteri*, Colorado, CASEY, p. 56, Ann. N. York Ac. vi, n. spp. *venosus*, p. 509, *sculptus*, *mexicanus*, *obliteratus*, p. 510, Mexico, CHAMPION, Biol. Centr. Am. Col. iv (1) : n. spp.
- Glyptotus yucatanus*, Mexico, CHAMPION, p. 524, Biol. Centr. Am. Col. iv (1), n. sp.
- Haporesma*, n. g., ? near *Misolampidius*, for *H. decipiens*, n. sp., Obs. FAIRMAIRE, p. 109, Rev. d'Ent. xi.
- Hedyphanes koltzei*, Turkestan, HEYDEN, p. 108, Deutsche ent. Z. 1, n. sp.
- Helæus aridus*, p. 41, *debilis*, *lubricus*, p. 42, *ingens*, p. 43, Centr. Austr. BLACKBURN, Tr. R. Soc. S. Austr. xvi, n. spp.
- Helopinus costatus*, = (*elegans*, Baudi, and *misolampoides*, Lac.) ; FAIRMAIRE, p. 112, Rev. d'Ent. xi.
- Helops cerberus*, metamorphoses ; HAMBEU, Mœurs, ii, p. 11.

- H. blaisdelli*, p. 66, *discipula*, p. 67, California, *cylindriciformis*, New Mexico, p. 68, CASEY, Ann. N. York Ac. vi, n. spp.
- Hinatismus pavesii*, Somaliland, GESTRO, p. 769, Ann. Mus. Genov. (2) xii, n. sp.
- Histiaca*, n. g., near *Anemia*, p. 107, for *H. bidentata*, n. sp., Obock, p. 108 ; FAIRMAIRE, Rev. d'Ent. xi.
- Hopatrum elderi*, p. 39, *longicorne*, p. 40, Australia, BLACKBURN, Tr. R. Soc. S. Austr. xvi, n. spp.
- Hoplonyx distinctus*, Congo, DUVIVIER, p. 163, Ann. Ent. Belg. xxxvi ; *H. ingratus*, S. W. Africa, PÉRINGUEY, p. 59, Tr. S. African Phil. Soc. vi (2) ; *H. vicinus*, Transvaal, PÉRINGUEY, t. c. : n. spp.
- Hyperops plicicollis*, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2), p. 50, n. sp.
- Idiobates*, n. g. for *Tenebrio castaneus*, Knoch ; CASEY, p. 62, Ann. N. York Ac. vi.
- Ildricus pacificus*, S. Africa, PÉRINGUEY, p. 122, Tr. S. African Phil. Soc. vi (2), n. sp.
- Iscerdes vicinus*, Central America, CHAMPION, p. 524, Biol. Centr. Am. Col. iv (1), n. sp.
- Isostira raucipennis*, Queensland, BLACKBURN, p. 225, Tr. R. Soc. S. Austr. xv, n. sp.
- Laslostola costuligera*, Margelan, HEYDEN, p. 107, Deutsche e. Z. 1892, n. sp.
- Leptodes*, characters and synonymy ; REITTER, pp. 93-96, Wien. ent. Z. xi.
- L. semenowi*, Araxes Valley, REITTER, p. 66, Wien. ent. Z. xi ; *L. heydeni*, Turkestan, REITTER, t. c. p. 95 : n. spp.
- Licinoma pallipes*, Australia, BLACKBURN, p. 542, P. Linn. Soc. N.S.W. (2) vi, n. sp.
- Lyphia striolata*, Obock, FAIRMAIRE, p. 111, Rev. d'Ent. xi, n. sp.
- Mesabates spissicornis*, p. 479, *inæqualis*, p. 480, Mexico, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.
- Mesostenopa auberti*, Obock, FAIRMAIRE, p. 107, Rev. d'Ent. xi, n. sp.
- Micrantereus lævior*, Obock, FAIRMAIRE, p. 114, Rev. d'Ent. xi, n. sp.
- Mityx politus*, = (*lævis*) ; CHAMPION, p. 520, Biol. Centr. Am. Col. iv (1).
- Nosoderma inæquale*, Say, = (*morbillosum*, Sol.) ; CHAMPION, p. 490, Biol. Centr. Am. Col. iv (1).
- Nuptis laticollis*, Panama, CHAMPION, p. 523, Biol. Centr. Am. Col. iv (1), n. sp.
- Odontopezus asper*, Usagara, ALLUAUD, p. ccxxxviii, Bull. Soc. Ent. Fr. lxi, n. sp.
- Œatus similis*, Central America, CHAMPION, p. 523, Biol. Centr. Am. Col. iv (1), n. sp.
- Ologlyptus hebes*, Mexico, CHAMPION, p. 506, pl. xxii, fig. 23, Biol. Centr. Am. Col. iv (1), n. sp.
- Opatrioides curtulus*, Syria, FAIRMAIRE, p. 149, Ann. Ent. Belg. xxxvi, n. sp.

- Ozycara breviscula*, Obock, FAIRMAIRE, p. 107, Rev. d'Ent. xi, n. sp.  
*Palembus*, n. g. near *Oplocephala* for *P. ocellaris*, n. sp., Florida; CAS  
 p. 65, Ann. N. York Ac. vi.  
*Paranemia*, n. g., *Trachyscelidarum*, for *P. schroderi*, n. sp., Turkestan;  
 HEYDEN, p. 103, Deutsche e. Z. 1892.  
*Phymatodes denticollis*, Caracas, p. 86, *clavicornis*, Buenos Aires, p.  
 FAIRMAIRE, Ann. Soc. Ent. Fr. lxi, n. spp.  
*Pimelia*, characters and synonymy of the species of the Canaries; SÉNAC  
 pp. 103-108, Ann. Soc. Ent. Fr. lxi. *P. thomsoni*, redescrib  
 SÉNAC, p. lxxiii, Bull. Soc. Ent. Fr. lxi.  
*P. alluaudi*, Canary Is., SÉNAC, p. 107, Ann. Soc. Ent. Fr. lxi, n. sp.  
*Pimeliopsis*, n. g. *Epiphysides*, for *P. granulata*, n. sp., Mexico, p.  
 pl. xxii, fig. 1; CHAMPION, Biol. Centr. Am. Col. iv (1).  
*Platydemia contractum*, Venezuela, FAIRMAIRE, p. 84, Ann. Soc. Ent.  
 lxi; *P. basicorne*, Argentine Rep., FAIRMAIRE, p. 250, Ann. I  
 Belg. xxxvi : n. spp.  
*Platyphanes creber*, Queensland, BLACKBURN, p. 225, Tr. R. Soc.  
 Austr. xv, n. sp.  
*Pacilesthus ragelineatus*, Venezuela, FAIRMAIRE, p. 91, Ann. Soc. Ent.  
 lxi, n. sp.  
*Pogonobasis hirsuta*, S. W. Africa, PÉRINGUEY, p. 51, Tr. S. African I  
 Soc. vi (2), n. sp.  
*Praogena tristis*, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc.  
 (2), n. sp.  
*Psammodes pachysoma*, p. 52, *errans*, p. 53, S. W. Africa, PÉRINGUEY,  
 S. African Phil. Soc. vi (2), n. spp.  
*Pyres* (sub *Centronopus*) *speciosus*, Pasc., = (*metallicus*, Chan  
 CHAMPION, p. 521, Biol. Centr. Am. Col. iv (1).  
*Rhinodius*, n. g. near *Chaetillus*, for *R. asper*, p. 87, *simonis*, *parcegran-*  
*striatopunctatus*, p. 88, n. spp., Venezuela; FAIRMAIRE, Ann.  
 Ent. Fr. lxi.  
*Rhytidonota absurda*, Somaliland, GESTRO, p. 768, Ann. Mus. Genov.  
 xii, n. sp.  
*Rues*, n. g. for *Helops ovipennis*, Casey; CASEY, p. 66, Ann. N. Y.  
 Ac. vi.  
*Saragus tricarinatus*, Australia, BLACKBURN, p. 43, Tr. R. Soc. S. A.  
 xvi, n. sp.  
*Scleron amplicolle*, Obock, FAIRMAIRE, p. 108, Rev. d'Ent. xi, n. sp.  
*Seirotiana simplex*, p. 540, *monticola*, p. 541, *dispar*, p. 542, Austr.  
 BLACKBURN, P. Linn. Soc. N.S.W. (2) vi; *S. major*, N. S. W.  
 BLACKBURN, p. 228, Tr. R. Soc. S. Austr. xv : n. spp.  
*Sepidiopsis*, n. g., near *Sepidium*, p. 771, for *S. cornigera*, p. 772, *vil-*  
*p.* 773, n. spp., Somaliland; GESTRO, Ann. Mus. Genov. (2) xii.  
*Sepidium ovampoense*, S. W. Africa, PÉRINGUEY, p. 55, Tr. S. Afri-  
 Phil. Soc. vi (2); *S. zambezianum*, S. Africa, PÉRINGUEY, p.  
 t. c. : n. spp.  
*Sepidostenus*, = (*Sepidiacis*); GESTRO, p. 775, Ann. Mus. Genov. (2) x

- Solenomerus velox*, S. W. Africa, PÉRINGUEY, p. 58, Tr. S. African Phil. Soc. vi (2), n. sp.
- Stenocara alborillosa*, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2), p. 49; *S. intermediu*, S. Africa, PÉRINGUEY, p. 121, t. c. : n. spp.
- Stibia maritima*, California, CASEY, p. 52, Ann. N. York Ac. vi, n. sp.
- Strongylium variolosum*, Congo, DUVIVIER, p. 164, Ann. Ent. Belg. xxxvi; *S. cyaneum*, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2); *S. picicorne*, Venezuela, FAIRMAIRE, p. 92, Ann. Soc. Ent. Fr. lxi; *S. platense*, Argentine Rep., FAIRMAIRE, p. 251, Ann. Ent. Belg. xxxvi : n. spp.
- Tactoderus subopacus*, Obock, FAIRMAIRE, p. 112, Rev. d'Ent. xi, n. sp.
- Tenophthalmus costifer*, Turkestan, HEYDEN, p. 108, Deutsche e. Z. 1892, n. sp.
- Talanus parallelus*, p. 92, *crenulatus*, p. 93, Venezuela, FAIRMAIRE, Ann. Soc. Ent. Fr. lxi, n. spp.
- Tenebrio angustus*, N. Persia, *syriacus*, Syria, ZOUFAL, p. 284, Wien. ent. Z. xi, n. spp.
- Tenesis*, n. g., near *Amenophis*, for *T. femoratus*, n. sp., Congo, DUVIVIER, p. 163, Ann. Ent. Belg. xxxvi.
- Trachynotus batesi*, = (*scrobiculatus*, Per.), *gracilipes*, = (*attenuatus*, Per.); PÉRINGUEY, p. 135, Tr. S. African Phil. Soc. vi (2).
- T. distinctus*, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2), p. 54; *T. lightfooti*, S. Africa, PÉRINGUEY, p. 122, t. c. : n. spp.
- Trigonopus laticollis*, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2), p. 57; *T. armaticeps*, Damaraland, PÉRINGUEY, p. 123, t. c. : n. spp.
- Trimytis obovata*, pl. xxii, fig. 2, *Mokri*, Mexico, CHAMPION, p. 478, Biol. Centr. Am. Col. iv (1), n. spp.
- Ulosonia ceratodera*, Venezuela, FAIRMAIRE, p. 85, Ann. Soc. Ent. Fr. lxi; *U. parvicornis*, Argentine Rep., FAIRMAIRE, p. 250, Ann. Ent. Belg. xxxvi : n. spp.
- Ulus latus*, California, BLAISDELL, p. 243, Ent. News, iii, n. sp.
- Usagaria australis*, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2), p. 56, n. sp.
- Zialas*, n. g., near *Gonocnemis*, for *Z. insolitus*, n. sp., Hué; FAIRMAIRE p. cx, Bull. Soc. Ent. Fr. lxi.
- Zopherus venosus* is distinct from *lavicollis*, *jourdani*, Sall., = (*mexicanus*, Sol., near Gray), p. 488, *elegans*, pl. xxii, fig. 7, *nodulosus*, fig. 6, figured; CHAMPION, Biol. Centr. Am. Col. iv (1).
- Zophobas morio*, variation noticed; CHAMPION, p. 522, Biol. Centr. Am. Col. iv (1).
- Zophosis acuticosta*, n. var. *pinardi*; THÉRY, p. clxxxi, Bull. Soc. Ent. Fr. lxi.
- Z. ogadenica*, Somaliland, GESTRO, p. 762, Ann. Mus. Genov. (2) xii; *Z. amplicollis*, Obock, FAIRMAIRE, p. 106, Rev. d'Ent. xi; *Z. rugatipennis*, *dorsata*, p. 47, *hypocrita*, *nana*, p. 48, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2) : n. spp.



## CISTELIDÆ.

[Cf. BEDEL (48), CASEY (161), FAIRMAIRE (261, 262, 263), REITZ (725).]

Revision of the N. American genera and species ; CASEY, pp. 69-169, *Ann. N. York Ac. vi.*

*Allecula seriatopora*, Argentine Rep., FAIRMAIRE, p. 251, *Ann. Ent. Belg. xxxvi*, n. sp.

*Andrimus*, n. g., p. 155, for a part of *Cteniopus*, and for *A. brunneus*, p. 1 concolor, p. 158, *nigrescens*, *consergens*, p. 159, n. spp., N. America CASEY, *Ann. N. York Ac. vi.*

*Apellatus palpalis*, ♀ = (*mastersi*, MacL.) ; BLACKBURN, p. 115, *P. Lin. Soc. N.S.W. (2) vii.*

*Cistela forticornis*, *flavida*, Syria, FAIRMAIRE, p. 150, *Ann. Ent. Belg. xxxvi* ; *C. ocularis*, Obock, FAIRMAIRE, p. 115, *Rev. d'Ent. xi* : n. spp.

*Cteniopus impressicollis*, *C. ? crassus*, Syria, FAIRMAIRE, p. 152, *Ann. Ent. Belg. xxxvi*, n. spp.

*Dietopsis acuminata*, Venezuela, FAIRMAIRE, p. 94, *Ann. Soc. Ent. Belg. lxi*, n. sp.

*Eryx asiatica*, Syria, FAIRMAIRE, p. 151, *Ann. Ent. Belg. xx* n. sp.

*Gonodera delagrangei*, p. 150, *atronitens*, p. 151, Syria, FAIRMAIRE, *Ann. Ent. Belg. xxxvi*, n. spp.

*Hymenorus infuscatus*, *picipennis*, p. 90, *melsheimeri*, p. 92, *obesus*, p. 92, *difficilis*, p. 94, *perforatus*, *curticollis*, p. 95, *discrepans*, p. 98, *apertus*, p. 99, *exiguus*, p. 100, *helveticus*, *porosicornis*, p. 101, *intermedius*, p. 102, *prolixus*, p. 103, *discretus*, p. 105, *convexus*, p. 106, *disseriatus*, p. 109, *testaceus*, p. 110, *rotundicollis*, p. 111, *iniqui fuscicornis*, p. 112, *nitidipennis*, p. 113, *inaequalis*, p. 114, *tenebrosus*, p. 115, *floridanus*, p. 116, *fuscus*, p. 117, *macer*, p. 118, *indutus*, p. 119, *gemellus*, p. 121, *uniseriatus*, p. 122, N. America, CASEY, *Ann. N. York Ac. vi*, n. spp.

*Isomira iowensis*, *discolor*, p. 145, *tenebrosa*, p. 146, *luscitiosa*, p. 148, *nitida*, p. 150, *oblongula*, p. 151, *texana*, p. 153, N. America, CASEY, *Ann. N. York Ac. vi*, n. spp.

*Lobopoda subcuneata*, p. 79, *oculatifrons*, p. 81, Texas, CASEY, *Ann. N. York Ac. vi* ; *L. pilosula*, Venezuela, FAIRMAIRE, p. 93, *Ann. Ent. Belg. lxi* : n. spp.

*Myetochara megalops*, p. 129, *gilvipes*, p. 131, *nigerrima*, p. 132, *lucipennis*, *pacifica*, p. 139, *procera*, p. 140, *nevadensis*, *crassulipes*, p. 141, N. America, CASEY, *Ann. N. York Ac. vi*, n. spp.

*Omophlus lepturoides*, metamorphoses ; XAMBEU, Mœurs, ii, p. 33.

*O. (Heliotaurus) brisouti*, Algeria, p. 794, *doriae*, Tunisia, p. 795, *Bull. Mus. Genov. (2) x* ; *O. densepunctatus*, *cribricollis*, *foveatus*, Syria, FAIRMAIRE, p. 153, *Ann. Ent. Belg. xxxvi* ; *O. willi*, Margelan, REITTER, p. 136, *Wien. ent. Z. xi* : n. spp.

- Tedinus*, n. g., p. 153, for *T. angustus*, Georgia, n. sp., p. 154, CASEY, Ann. N. York Ac. vi.  
*Xystropus californicus*, = (*Prostenus fulgidus*, Mäkl.); CASEY, p. 74, Ann. N. York Ac. vi.  
*X. fascicularis*, p. 94, *alborittatus*, *gossypiatu*s, p. 95, Venezuela, FAIRMAIRE, Ann. Soc. Ent. Fr. lxi, n. spp.

## MELANDRYIDÆ, LAGRIIDÆ.

- [Cf. FAIRMAIRE (261), GUILLEBEAU (Échange, 1887-88), PÉRINGUEY (672, 673), XAMBEU (1023).]  
*Abdera triguttata*, metamorphoses; XAMBEU, Mœurs, ii, p. 19.  
*Eutrapela concolor*, n. n. for *unicolor*, Pér.; PÉRINGUEY, p. 134, Tr. S. African Phil. Soc. vi (2).  
*Hysterarhtron collare*, Thoms., referred to *Lagriidæ*; RITSEMA, p. 54, Notes Leyd. Mus. xiv.  
*Lagria corrugata*, Zambesi, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2), p. 61, n. sp.  
*Orchesia australis*, *reyi*, p. 3, Échange, 1887, No. 31, *subimpressa*, France, No. 32, p. 4, *corsica*, Corsica, p. 13, *abeillei*, Marseilles, p. 14, No. 40, 1888, GUILLEBEAU, n. spp.  
*Statira simonis*, p. 95, *variicollis*, p. 96, Venezuela, FAIRMAIRE, Ann. Soc. Ent. Fr. lxi, n. spp.

## PEDILIDÆ, XYLOPHILIDÆ.

- [Cf. FAIRMAIRE (261), HARRINGTON (389), PIC (678).]  
*Bactrocera cribripennis*, Venezuela, FAIRMAIRE, p. 97, Ann. Soc. Ent. Fr. lxi, n. sp.  
*Ischalia vancouverensis*, N. America, HARRINGTON, p. 132, Canad. Ent. xxiv, n. sp.  
*Macratia comosella*, Venezuela, FAIRMAIRE, p. 97, Ann. Soc. Ent. Fr. lxi, n. sp.  
*Scaptia trotommoides*, Syria, PIC, Échange, 1892, p. 4, n. sp.  
*Xylophilus brevicornis*, Perris, habitat and characters; CHAMPION, Ent. M. M. xxviii, p. 68.  
*X.-Euglenes* (*Anidorus*, M.) *testaceipes*, Algeria, PIC, p. 139, Échange, 1892, n. sp.?

## ANTHICIDÆ.

- [Cf. FAIRMAIRE (261, 262), HORN (418), PIC (678, 680, 682, 684, 685, 687, 689, 690), REITTER (725).]  
*Anthicus*: synonymical notes, with *A. brevipilis*, n. n. for *pilosus*, Pic, *marseuli*, n. n. for *scoticus*, Mars., and *reyi*, n. n. for *puberulus*, Rey; PIC, pp. cccxi & cccii, Bull. Soc. Ent. Fr. lxi.

- .1. *delagrangi*, Syria, *pilosus*, *deslogesi*, Algeria, PIC, p. 43, Échange, *A. henoni*, Algeria, PIC, p. 103, t. c.; *A. rubricollis*, Marocco, t. c. p. 139 (? n. sp.); *A. roberti*, p. 213, *testaceipes*, p. 214, AL PIC, Rev. Sci. Bourb. v; *A. chobauti*, Algeria, PIC, p. lxxv, Bull Ent. Fr. lxi; *A. bedeli*, *carthaginiensis*, Algeria, p. cxcvii, bl Spain, p. cxcviii, PIC, t. c.; *A. demaisoni*, *lepaumi*, Egypt, p. cxxxi, t. c.; *A. kraatzi*, Syria, p. cclxviii, *nitidior*, Turke p. cclxix, *sicilie*, Sicily, *angulifer*, Syria, p. cclxx, *croissanc* Corsica, p. cclxxi, PIC, t. c. : n. spp.
- Formicomus pegusus*, Transcaspian Region, REITTER, p. 63, Wien. en xi; *F. atrigicollis*, *spinicrus*, Obock, FAIRMAIRE, p. 116, Rev. d xi : n. spp.
- Leptaleus truncatulus*, Obock, FAIRMAIRE, p. 116, Rev. d'Ent. xi, n. s
- Notozus jacqueti*, Wallachia, PIC, p. 4, Échange, 1892; *N. schwarzi*, l HORN, p. 47, Tr. Am. Ent. Soc. xix : n. spp.
- Tomoletus bosnicus*, Bosnia, PIC, p. 241, Rev. Sci. Bourb. v, n. sp.

#### MORDELLIDÆ, RHIPIDOPHORIDÆ, STYLOPIDÆ.

- [Cf. BLACKBURN (95), CHAMPION (163), CHOBAUT (169), FAIRY (261, 264), HORN (418).]
- Conalia kaudi*, habits noticed; FLEISCHER, p. 209, Wien. ent. Z. xi.
- Mordella exilis*, varr.? described, BLACKBURN, p. 46, Tr. R. Soc. S. A xvi.
- Mordellistena floridensis*, larva and larval habits; RILEY, P. E. Soc. V ii, p. 321, figs. *M. nigricans*, habits; BRODIE, p. 139, Canad. xxiv.
- M. tenuis*, Venezuela, FAIRMAIRE, p. 98, Ann. Soc. Ent. Fr. lxi, n. sp
- Pentaria oberthuri*, Pyrenees or., CHAMPION, p. 109, Ent. M. M. x n. sp.
- Myodites*: note on N. American; HORN, p. 48, Tr. Am. Ent. Soc. xi
- Rhipidius abeillei*, Mt. Ventoux, CHOBAUT, Mém. Ac. Vaucluse, xi, p. pl., n. sp.
- Rhipiphorus basicollis*, Caracas, FAIRMAIRE, p. 98, Ann. Soc. Ent. Fr
- R. argentinus*, Argentine Rep., FAIRMAIRE, p. 252, Ann. Ent. xxxvi : n. spp.
- Stylopidæ*: localities and dates of British; DALE, Ent. M. M. xxviii,
- Elenchus tenuicornis*, parasitic on *Homopteron* (*Liburnia*), SAUNDERS, M. M. xxxviii, pp. 249 & 297, fig.; details of structure of the Eaton, t. c. p. 250, woodcut.
- Xenos* sp.: life-history; HUBBARD, pp. 257-261, Canad. Ent. xxiv.

#### CANTHARIDÆ.

- [Cf. BEDEL (51), BLACKBURN (94, 95), CASEY (161), CHAMPION (ESCHERICH (258), FAIRMAIRE (263, 264, 271), FRIVALDSZKY (PÉRINGUEY (672, 673), PROCHAZKA (705), REITTER (725), Wl (989).]

List of what is known as to habits and early stages of European *Meloidæ*; BEDEL (51).

*Calospasta mirabilis*, figured, Biol. Centr. Am. Col. iv (2) pl. xviii, fig. 12.

*C. sulcifrons*, Mexico, *id. t. c.* p. 394, pl. xviii, fig. 14, n. sp.

*Cantharis*: CHAMPION, Biol. Centr. Am. Col. iv (2), notices and figures the following—*C. cardinalis*, pl. xx, fig. 12, p. 438, *erythrothorax*, fig. 13, p. 439, *quadrimaculata*, fig. 14, p. 440, *corallifera*, fig. 17, p. 441, *sanguinea*, fig. 19, p. 442, *bipuncticollis*, p. 443, fig. 21, *variabilis*, p. 447, *proteus*, figs. 22 & 23, p. 448.

*C. (Lytta) optata*, S. W. Africa, PÉRINGUEY, p. 65, Tr. S. African Phil. Soc. vi (2); *C. intricata*, p. 441, pl. xx, fig. 18, *erebea*, p. 442, fig. 20, *subviolacea*, p. 445, *scitula*, fig. 25, *signaticollis*, fig. 24, p. 446, *michocanæ*, p. 447, Mexico, CHAMPION, Biol. Centr. Am. Col. iv (2) : n. spp.

*Cephaloon*: notes on the variation of the species; HEYDEN, pp. 165–169, Deutsche c. Z. 1892.

*Cysteodemus wizeneni*, figured; Biol. Centr. Am. Col. iv (2), pl. xvii, fig. 10.

*Epicauli*: the following species are noticed, with much synonymy and many figures, in Biol. Centr. Am. Col. iv (2), by CHAMPION: *E. curvicornis*, pl. xviii, fig. 25, *basimacula*, pl. xix, fig. 1, p. 406, *rufipedes*, fig. 2, p. 407, *rufipennis*, fig. 4, p. 408, *terminata*, fig. 5, p. 409, *funesta*, fig. 6, *punctum*, fig. 7, p. 410, *maculata*, p. 413, *ocellata*, fig. 9, *pardalis*, fig. 10, *vitticollis*, fig. 11, p. 414, *grammica*, fig. 12, p. 415, *niveolineata*, figs. 14 & 15, *albolineata*, fig. 16, p. 416, *carmelita*, fig. 17, p. 417, *cinctipennis*, fig. 18, *croceicincta*, fig. 19, p. 420, *cinerea*, p. 421, *stigmata*, p. 422, *neglecta*, p. 423, pl. xix, fig. 21, *obesa*, p. 424. *E. griseo-nigra*, n. var. *riojana*; FAIRMAIRE, p. 252, Ann. Ent. Belg. xxxvi.

*E. desgodinsi*, Tibet, FRIVALDSZKY, p. 115, Term. füzetek, xv; *E. levettei*, Colorado, *duplicata*, Arizona, p. 172, CASEY, Ann. N. York Ac. vi; *E. atripilis*, p. 410, *cinereiventris*, p. 411, pl. xix, fig. 8, *evanescens*, *unicarata*, p. 412, *unilineata*, fig. 13, p. 415, *atricolor*, p. 419, *tripartita*, p. 421, fig. 20, *auricomans*, p. 424, fig. 22, *leucocoma*, p. 425, fig. 23, *candidata*, *emarginata*, fig. 24, p. 426, *singularis*, fig. 25, *compressicollis*, fig. 26, p. 427, CHAMPION, Biol. Centr. Am. Col. iv (2) : n. spp.

*Eupompha fissiceps*, figured, Biol. Centr. Am. Col. iv (2), pl. xviii, fig. 13.

*Gnathium minimum*, figured, Biol. Centr. Am. Col. iv (2), pl. xvii, fig. 17.

*Gnathospasta*: *Cantharis labialis* referred to this; CHAMPION, p. 403, Biol. Centr. Am. Col. iv (2).

*Halosimus araxis*, Araxes Valley, REITTER, p. 63, Wien. ent. Z. xi, n. sp. *Hapalus* and *Stenoria*, revision of the palaearctic species; PROCHAZKA, pp. 263–270, Wien. ent. Z. xi.

*H. binævus*, *reitteri*, Turkestan, PROCHAZKA, Wien. ent. Z. xi, p. 270, n. spp.

*Henous mexicanus*, figured and noticed; CHAMPION, Biol. Centr. Am. Col. iv (2) p. 369, pl. xvii, fig. 6.

- Hoplozonitis*, n. g., p. 228, for *H. mira*, n. sp., Queensland, p. 229 ; BURN, Tr. R. Soc. S. Austr. xv.
- Horia auriculata*, N. and Centr. America, CHAMPION, p. 372, pl. xvii 9-9d, Biol. Centr. Am. Col. iv (2) n. sp.
- Lydus pilicollis, vulneratus*, p. 155, *impressicollis*, p. 156, Syria, FAIRM Ann. Ent. Belg. xxxvi, n. spp.
- Lytta mæsta*, n. n. for *lugubris*, Pér., *designata*, n. n. for *albolineata*, PÉRINGUEY, p. 135, Tr. S. African Phil. Soc. vi (2).
- L. carneola*, p. 125, *amana*, p. 126, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2), n. spp.
- Macrobasis fumosa*, p. 395, pl. xviii, fig. 15, *purpurea*, p. 397, fig. *diversicornis*, p. 399, fig. 19, *beckeri*, p. 400, fig. 20, *ochrea*, p. fig. 23, *segmentata*, fig. 22, noticed and figured ; CHAMPION, Centr. Am. Col. iv (2).
- M. distorta*, p. 396, pl. xviii, fig. 16, *disparilis*, p. 398, fig. 18, *tenuic* p. 400, fig. 21, *megacephala*, p. 401, fig. 24, Centr. America, CHAM Biol. Centr. Am. Col. iv (2) : n. spp.
- Megelra cancellata* and var. described and figured ; CHAMPION, p pl. xvii, fig. 8.
- Meloë* : notes on young larva ; WEBER, Ber. Ver. Cassel, 1891, 1892, pp. 1-5, pl.
- M. meridianus*, S. W. Africa, PÉRINGUEY, p. 62, Tr. S. African Phil vi (2), n. sp.
- Mylabris tenuipicta, posticata*, Syria, FAIRMAIRE, p. 154, Ann. Ent. xxxvi ; *M. hilaris*, p. 63, *M. (Ceroctis) blanda, aliena*, p. 64, Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2) : n. spp.
- Negalius*, n. g., near *Phodaga*, for *N. marmoratus*, n. sp., Texas ; C p. 175, Ann. N. York Ac. vi.
- Nemognatha ceruleipennis*, varr. figured and noticed, p. 374, pl. xvii 7, &c., *tarasca*, Dug., figured, fig. 4, redescribed, p. 378, *zonit* fig. 15, *flava*, fig. 16, figured ; CHAMPION, Biol. Centr. Col. iv (2).
- N. brevicollis*, pl. xvii, fig. 11, *foveifrons*, fig. 12, p. 376, *nigripes*, *piata*, fig. 13, p. 377, Mexico, CHAMPION, Biol. Centr. Am. Col. iv n. spp.
- Pyrota terminata*, p. 429, pl. xx, fig. 1, *punctata*, fig. 2, *mylabrina*, p. 430, *postica*, fig. 5, p. 431, *tenuicostalis*, p. 432, fig. 6, *dive* fig. 7, *decorata*, fig. 8, p. 433, *nobilis*, fig. 10, *quadrineratus*, fig. p. 436, noticed and figured ; CHAMPION, Biol. Centr. Am. iv (2).
- P. rugulipennis*, p. 431, pl. xx, fig. 4, *hirticollis*, fig. 9, *mariarum*, p. Mexico, CHAMPION, Biol. Centr. Am. Col. iv (2) ; *P. pun* p. 173, *concinna*, p. 174, Texas, CASEY, Ann. N. York Ac. n. spp.
- Tetraonyx sexguttatus*, variation noticed, p. 388, figured, pl. xviii, figs *batesi*, fig. 7, *bipartitus*, fig. 8, *sallæi*, fig. 9, *maculatus*, fig. 10, *fron* fig. 11, figured ; Biol. Centr. Am. Col. iv (2).

*Zonabris* : regularity in variation of ; ESCHERICH, Deutsche e. Z. 1892, pp. 113-130, pl. i. *Z. beckeri*, note on ; BECKER, p. 69, Bull. Mosc. 1892.

*Z. chinensis, parvula*, China, FRIVALDSZKY, p. 114, Term. füzetek, xv, n. spp.

*Zonitis analis*, Ab., *thoracica*, Cast., *abeillei*, Bed., noticed, *ruficollis*, distinctive, and ♂ characters, p. 174, and of allies, p. 176 ; ESCHERICH, Wien. ent. Z. xi. *Z. posticalis*, n. n. for *apicalis*, Pér. ; PÉRINGUEY, p. 135, Tr. S. African Phil. Soc. vi (2). *Z. fohri*, fig. 18, *nigromaculata*, fig. 23, *fulva*, fig. 24, figured, pl. xvii ; Biol. Centr. Am. Col. iv (2). *Z. thoracica*, habits ; VACHAL, p. xxiii, Bull. Soc. Ent. Fr. lxi.

*Z. gracilentia*, p. 156, *cæruleiceps*, p. 157, Syria, FAIRMAIRE, Ann. Ent. Belg. xxxvi ; *Z. quadricollis*, p. cliii, *scutellaris, sinuatipennis*, p. cliv, Turkestan, FAIRMAIRE, Bull. Soc. Ent. Fr. lxi ; *Z. pulchella, proxima*, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2) ; *Z. helmsi*, Australia, BLACKBURN, Tr. R. Soc. S. Austr. xvi ; *Z. duniana, perforata*, Texas, CASEY, p. 170, Ann. N. York Ac. vi ; *Z. tenebrosa*, p. 383, pl. xvii, fig. 19, *sanguinicollis*, p. 384, figs. 20 & 21, *lateritia*, p. 385, fig. 22, *megalops*, p. 386, fig. 26, Centr. America, CHAMPION, Biol. Centr. Am. Col. iv (2) : n. spp.

## CEDEMERIDÆ.

[Cf. ABEILLE (1), FAIRMAIRE (263, 264), GESTRO (334).]

*Ananca pallida*, Somaliland, GESTRO, p. 777, Ann. Mus. Genov. (2) xii ; *A. sellata, luridimembris*, Argentine Rep., FAIRMAIRE, p. 253, Ann. Ent. Belg. xxxvi : n. spp.

*Asclera partitipennis*, Syria, FAIRMAIRE, p. 158, Ann. Ent. Belg. xxxvi, n. sp.

*Chrysanthia oralis*, p. 158, *chalcochroa*, p. 159, Syria, FAIRMAIRE, Ann. Ent. Belg. xxxvi, n. sp.

*Edemera basipes*, Cyprus, p. 63, *lutescens*, Syria, p. 64, ABEILLE, Rev. d'Ent. xi ; *Æ. apicipennis*, Syria, FAIRMAIRE, p. 157, Ann. Ent. Belg. xxxvi : n. spp.

*Mycetochares grandicollis, longior*, Syria, FAIRMAIRE, p. 149, Ann. Ent. Belg. xxxvi, n. spp.

*Nacerdes melanura*, distribution of ; CHAMPION, Ent. M. M. xxviii, p. 23.

*Stenaxis parallela*, Syria, FAIRMAIRE, p. 158, Ann. Ent. Belg. xxxvi, n. sp.

*Xanthochroa foveata*, Syria, FAIRMAIRE, p. 157, Ann. Ent. Belg. xxxvi n. sp.

## CURCULIONIDÆ.

[Cf. AURIVILLIUS (25), BECKER (44), BLACKBURN (91, 93, 94, 95), CASEY (161, 162), DESBROCHERS (200, 201, 202, 205-209), DUVIVIER (230, 231), FAIRMAIRE (262, 270), FAUST (272-278, 402), FRIVALDSZKY (309, 310), GESTRO (334), GRILAT (364), GUILLEBEAU (375), 1892. [VOL. XXIX.]

HELLER (394), PÉRINGUEY (672, 673), REITTER (725), REY ROELOFS (772-776), ROST (780), SCHWARZ (805), SCUDDER STIERLIN (898, 899, 900), TRYON (953), WEBSTER (991).]

Summary of and remarks on N. American Tertiary *Rhynch* SCUDDER (814).

For many synonymical remarks on Palearctic *Curculionid* DESBROCHERS, Frelon, i, pp. 20-32.

*Abbrachius*, n. g., near *Rhynchophorus*, p. 210, for *A. insularis*, Aru Is., p. 211; ROELOFS, Notes Leyd. Mus. xiv.

*Acamptus echinus*, New York, CASEY, p. 445, Ann. N. York n. sp.

*Acalles edoughensis*, *subglobatus*, p. 97, *7-costatus*, p. 98, *longus* Algeria, DESBROCHERS, Frelon, ii; *A. profusus*, Texas, CASEY Ann. N. York Ac. vi : n. spp.

*Acallestes* : characters ; FAUST, p. 39, S. E. Z. liii.

*Agnesiotis blanda*, Australia, FAUST, p. 180, S. E. Z. liii, n. sp.

*Alaocyba* : systematic position is in *Erihrinini*, CASEY, p. 709, York Ac. vi.

*Alcides angulus*, *hypocritus*, &c., synonymical note ; AURIVILLIUS, N. Arch. Mus. Paris (3) iii.

*A. eruditus*, p. 312, *josephus*, p. 314, Congo, DUVIVIER, Ann. Et xxxvi; *A. affaber*, p. 218, *clathratus*, p. 219, Laos, *decem* Cambodia, p. 220, AURIVILLIUS, N. Arch. Mus. Paris (3) *richteri*, *pervicax*, p. 207, *reductus*, N. Guinea, *sellatus*, p. 208, p. 209, Sumatra, FAUST, S. E. Z. liii : n. spp.

*Allominus politus*, Texas, CASEY, p. 692, Ann. N. York n. sp.

*Alophus*, = (*Seidlitzia*, Desb.); FAUST, p. 51, S. E. Z. liii.

*Alycodes dubius*, Dietz, referred to *Dorytomus* ; CASEY, p. 363, York Ac. vi.

*Ambates nobilis*, p. 40, *bipartitus*, *buqueti*, p. 41, Venezuela, S. E. Z. liii, n. spp.

*Ampelogypter longipennis*, N. America, CASEY, p. 549, Ann. N. Y vi, n. sp.

*Anchoninae*, new group of *Molytides*, defined, p. 19, genera ta pp. 19 & 20, species revised, pp. 21-60 ; FAUST, Deutscl 1892.

*Anchonus panamensis*, Panama, *pudens*, Guadeloupe, p. 43, l Venezuela, p. 44, *fraterculus*, p. 45, *murcidus*, Costa Rica, *lentus*, Mexico, p. 46, *intricatus*, Panama, *brevis*, Venezuela *mirus*, Guatemala, p. 48, *kirschi*, Colombia, *pedestris*, Mexic *tardus*, Fonteboia, p. 50, *morulus*, *femoralis*, Venezuela, p. 51, Honduras, *junix*, p. 52, *affaber*, p. 53, Colombia, *confidens*, Ve p. 54, FAUST, Deutsche e. Z. 1892 : n. spp.

*Anephilus*, n. g., *Anchoninae*, p. 34, for *A. simoni*, p. 56, *longulu* zuela, *guadulpianus*, Guadeloupe, p. 57, *claviger*, Venezuel n. spp., FAUST, Deutsche e. Z. 1892.

- Anthonomus* : characters of the European species ; DESBROCHERS, Frelon, ii, pp. 106, &c. *A. ulmi*, *pedicularius*, synonymy ; DESBROCHERS, Échange, 1891, No. 76, p. 31. *A. musculus* and *signatus*, characters noticed ; HAMILTON, Canad. Ent. xxiv, p. 41.
- A. curtulus*, Mediterranean Region, DESBROCHERS, p. 112, Frelon, ii, n. sp.
- Anypotactus* : systematic position is in *Sitoninae* ; FAUST, p. 21, S. E. Z. liii.
- A. sulcicollis*, Venezuela, FAUST, p. 21, S. E. Z. liii, n. sp.
- Apion semirufum*, Lyons, REY, Échange, 1888, No. 45, p. 4 ; *A. fallaciosum*, Algeria, *turkestanicum*, p. 107, *reitteri*, *soricinum*, p. 108, Turkestan, DESBROCHERS, Frelon, i ; *A. terræ-reginæ*, Queensland, BLACKBURN, p. 151, P. Linn. Soc. N.S.W. (2) vii : n. spp.
- Apirocalus cornutus*, n. var. *ebrius* ; FAUST, p. 189, S. E. Z. liii.
- Apoderus cardinalis*, n. n. for *miniatus*, Pér. ; PÉRINGUEY, p. 135, Tr. S. African Phil. Soc. vi (2).
- A. balteatus*, Transvaal, PÉRINGUEY, p. 129, Tr. S. African Phil. Soc. vi (2), n. sp.
- Apolitrepus*, n. g., *Cossonini*, near *Caulophilus*, for *A. densicollis*, n. sp., Arizona ; CASEY, p. 695, Ann. N. York Ac. vi.
- Arachnopus fossulatus*, *stigmatus*, p. 223, *fenestratus*, p. 224, New Guinea, FAUST, S. E. Z. liii, n. spp.
- Aterpus raucus*, *abruptus*, Australia, BLACKBURN, p. 132, P. Linn. Soc. N.S.W. (2) vii, n. spp.
- Attatagenus cordicollis*, Portugal, p. 75, DESBROCHERS, Frelon, i, n. sp.
- Attelabus (Lamprolabus) biastatus*, Yunnan, FRIVALDSZKY, p. 117, Term. füzetek, xv, n. sp.
- Auletobius glaber*, *tibialis*, Venezuela, FAUST, p. 43, S. E. Z. liii, n. spp.
- Aulobaris dux*, Nebraska, CASEY, p. 546, Ann. N. York Ac. vi.
- Bagos frit*, *longitarsis*, &c., synonymy and characters ; FOWLER, Ent. M. M. xviii, p. 82.
- Balaninus* : characters of the European species ; DESBROCHERS, Frelon, ii, pp. 102-105.
- B. nivosus*, p. 205, *pluto*, p. 206, New Guinea, FAUST, S. E. Z. liii, n. spp.
- Barini* : the N. American genera tabulated and their classification discussed ; CASEY, pp. 460-469, Ann. N. York Ac. vi.
- Baridius* : revision of the European ; DESBROCHERS, Frelon, ii, pp. 19-69.
- B. phlomidis*, Sarepta, BECKER, p. 70, Bull. Mosc. 1892 (? n. sp.) ; *B. abeillei*, Syria, p. 44, *litigiosus*, Sarepta, p. 45, *insularis*, Corsica, p. 48, *triplagiatus*, p. 49, *stricticollis*, p. 54, Syria, *edoughensis*, p. 55, *corinthius* (Fairm.), p. 57, Algeria, *siciliensis*, Sicily, p. 59, *mecinoides*, Tunisia, p. 62, *demaïsoni*, Egypt, p. 64, DESBROCHERS, Frelon, ii : n. spp.
- Barilepton famelicum*, p. 677, *fulciger*, p. 678, N. America, CASEY, Ann. N. York Ac. vi, n. spp.
- Barinus suffusus*, p. 670, *difficilis*, p. 671, *curticollis*, p. 673, N. America, CASEY, Ann. N. York Ac. vi, n. spp.



- Baris rectirostris*, Alexander Mts., FAUST, p. 63, Deutsche e. Z.  
*B. striolala*, p. 222, *strigosa*, p. 223, Cambodia, AURIVILLI  
 Arch. Mus. Paris (3) iii; *B. ingens*, p. 476, *arizonica*, p. 478, *his*  
*gravida*, p. 479, *callida*, p. 481, *lubrica*, p. 482, *soluta*, p. 484,  
*ensis*, p. 485, *vespertina*, p. 486, *oblongula*, p. 487, *dilatata*, p.  
*cuneipennis*, p. 489, *aprica*, *dolosa*, p. 490, *zuniana*, p. 491, o  
*porosicollis*, p. 492, *punctiventris*, p. 493, *brunneipes*, p. 495, de  
 p. 496, *futilis*, p. 497, *inconspicua*, p. 498, *subsimilis*, *socialis*,  
*aperta*, p. 500, *abrupta*, *tenuestriata*, p. 501, *discipula*, p. 503,  
*lans*, p. 504, *aeneomicans*, *hyperion*, p. 505, *vitreaola*, p. 506,  
*splendens*, p. 507, *exigua*, p. 508, N. America, CASEY, Ann. N.  
 Ac. vi : n. spp.
- Barynotus scutatus*, Finland, DESBROCHERS, p. 99, Frelon, i, n. sp.  
*Barypeithes longicornis*, Abchasia, STIERLIN, p. 410, MT. Schw. er  
 viii, n. sp.
- Blosyrus obliquatus*, Congo, DUVIVIER, p. 164, Ann. Ent. Belg.  
 n. sp.
- Brachycerus incommodus*, *adustus*, p. 72, *viduatus*, p. 73, S. W.  
 PÉRINGUEY, Tr. S. African Phil. Soc. vi (2), n. spp.
- Brachyderes rosti*, Caucasus, STIERLIN, p. 411, MT. Schw. ent. G  
 n. sp.
- Brachyomus histrio*, *bicostatus*, p. 14, *sallei*, p. 15, Venezuela,  
 S. E. Z. liii, n. spp.
- Brachysomus ornatus*, Bohemia, STIERLIN, p. 366, MT. Schw. en  
 viii, n. spp.
- Butlikoferia*, n. g., *Ulomascides*, p. 136, for *B. liberiensis*, n. sp., W.  
 p. 137, ROELOFS, Notes Leyd. Mus. xiv.
- Byctiscus pariei*, Laos, AURIVILLIUS, p. 207, N. Arch. Mus. Paris  
 n. sp.
- Cactophagus subnitens*, Arizona, CASEY, p. 685, Ann. N. York  
 n. sp.
- Calandra rugicollis*, Florida, CASEY, p. 687, Ann. N. York Ac. vi,  
*Calandrinus insignis*, p. 619, *obsoletus*, p. 620, N. America, CASEY, N  
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- Camptorhinus cineritius*, Obock, FAIRMAIRE, p. 118, Rev. d'Ent. xi  
*Canistes*, n. g., near *Acalles*, for *C. schusteri*, n. sp., Missouri;  
 p. 447, Ann. N. York Ac. vi.
- Canoizus nigroclavatus*, Siam, AURIVILLIUS, p. 214, N. Arch. Mus  
 (3) iii, n. sp.
- Carphonotus*, n. g., *Cossonini*, for *C. testaceus*, n. sp., Minnesota;  
 p. 694, Ann. N. York Ac. vi.
- Catamonus robustus*, Kolbe, referred to *Heterostylus*, Faust; FAUST  
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- Catapastus*, n. g., *Burini*, p. 664, for *C. diffusus*, n. sp., N. America,  
 and *Zygobaris conspersus*, Lec.
- Cataponus*, n. g., p. 48, for *C. curtulus*, Senegal, *C. (Grypnus)*  
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- Centrinites*, n. g., near *Centrinus*, p. 615, for *C. strigicollis*, n. sp., N. America, p. 616; CASEY, Ann. N. York Ac. vi.
- Centrinogyna*, n. g., p. 620, for *Centrinus strigata*, Lec., and *C. procera*, n. sp., California, p. 622; CASEY, Ann. N. York Ac. vi.
- Centrinopus*, n. g., near *Centrinus*, p. 601, for *C. helvinus*, *alternatus*, n. spp., N. America, p. 602, CASEY, Ann. N. York Ac. vi.
- Centrinus tortuosus*, p. 580, *albotectus*, p. 582, *grisescens*, p. 583, *finitimus*, *hospes*, p. 585, *clarescens*, p. 586, *exulans*, p. 588, *acuminatus*, p. 590, *globifer*, p. 591, *nubecula*, *clientulus*, p. 594, *denticornis*, p. 597, *salebrosus*, p. 598, *pinguescens*, p. 599, *pulverulentus*, p. 600, N. America, CASEY, Ann. N. York Ac. vi, n. spp.
- Centyres sinuatus*, Victoria, BLACKBURN, p. 129, P. Linn. Soc. N.S.W. (2) vii, n. sp.
- Cestophorus*, n. g., *Anchonina*, p. 23, for *C. idoneus*, Colombia, p. 23, *simoni*, *guerini*, *mendosus*, *granulicollis*, *necessarius*, p. 24, Venezuela, *tribulus*, *infidus*, p. 25, Colombia : n. spp., and pp. 39-42; FAUST, Deutsche e. Z. 1892.
- Ceutorrhynchus balsamina*, Berne, GUILLEBEAU, Échange i, No. 7, p. 3; *C. conformis*, Algeria, GRILAT, Échange, 1887, No. 32, p. 1 : n. spp.
- Chærorrhinus squalidus*, metamorphoses, XAMBEU, p. 38, Mœurs, ii.
- Chalcocybebus richteri*, New Guinea, FAUST, p. 205, S. E. Z. liii, n. sp.
- Chaleponotus*, n. g., near *Chalcodermus*, for *C. elusus*, n. sp., Indiana; CASEY, p. 444, Ann. N. York Ac. vi.
- Cherrus inconspicuus*, p. 53, *longulus*, *maurulus*, p. 54, Australia, BLACKBURN, Tr. R. Soc. S. Austr. xvi : n. spp.
- Chiloneus ottomanus*, Turkey, DESBROCHERS, p. 113, Frelon, i, n. sp.
- Chirozelus elaphus*, Sumatra, FAUST, p. 221, S. E. Z. liii, n. sp.
- Cimbus ocampoensis*, S. W. Africa, PÉRINGUEY, p. 67, Tr. S. African Phil. Soc. vi (2), n. sp.
- Cionus albopunctatus*, Laos, AURIVILLIUS, p. 218, N. Arch. Mus. Paris (3) iii, n. sp.
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- Cleonus perlatus* and allies, synonymy; DESBROCHERS, pp. 18-20, Frelon, i.
- C. (Bothynoderes) dissimilis*, S. W. Africa, PÉRINGUEY, p. 75, Tr. S. African Phil. Soc. vi (2), n. sp.
- Cneorhinus* of Europe and allies, revision of; DESBROCHERS, Frelon, i, pp. 52, &c.
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- Ootaster* referred to *Hylobiides*; DESBROCHERS, p. 70, Frelon, ii.
- Cratopus aurostriatus*, Seychelles, FAIRMAIRE, p. cli, Bull. Soc. Ent. lxi, n. sp.
- Ctenolobus*, n. g., near *Lacordaireus*, for C. *squamiger*, n. sp., MADESCHER, Frelon, i (cf. FAUST, S. E. Z. liii, p. 52).
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- Cyclomaurus moraguesi*, p. 117, *boghariensis*, p. 118, Algeria, *caudatus*, p. 119, Tunisia, DESBROCHERS, Frelon, i, n. spp.
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- Dermatodes albarius*, Engano, p. 185, *succinctus*, *aptus*, Sumatra, FAUST, S. E. Z. liii, n. spp.
- Desmidophorus fasciatus*, Laos, AURIVILLIUS, p. 221, N. Arch. Mus. Paris (3) iii; D. *dohrni*, Sumatra, p. 211, *prætor*, Almahera, p. 212, FAUST, S. E. Z. liii : n. spp.
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- Desmoris*, Lec., merged in *Smicronyx*; CASEY, p. 382, Ann. N. York Ac. vi.
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- Oopterinus*, n. g., for *Otidocephalus perforatus*, Horn; CASEY, p. 438, N. York Ac. vi.
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- Olidocephalus nivosus*, p. 429, *insignis*, *estriatus*, p. 430, *egregius*, p. 431, *floridanus*, p. 433, *speculator*, p. 434, *rusticornis*, p. 435, *cavirostris*, p. 437, N. America, CASEY, Ann. N. York Ac. vi, n. spp.
- Otiorrhynchus prorsus* belongs to subg. *Arammichus*; REITTER, p. 26, Wien. ent. Z. xi. *O. valachia*, distinctive characters ; FRIVALDSZKY, p. 132, Term. füzetek, xv.
- O. dilatipes*, France, GUILLEBEAU, Échange, i, No. 8, p. 2 ; *O. nevadensis*, Spain, p. 357, *latifrons*, Abruzzi, p. 358, *O. (Tournieria) brevipennis*, Greece, *thoracicus*, Pennine Alps, p. 359, STIERLIN, MT. Schw. ent. Ges. viii ; *O. kelesenyii*, Hungary, FRIVALDSZKY, p. 132, Term. füzetek, xv ; *O. abchasicus*, Caucasus, ROST, p. 402, Deutsche e. Z. 1892 ; *O. (Tournieria) hystericus*, Alexander Mts., FAUST, p. 61, Deutsche e. Z. 1892 ; *O. caroli*, *gracilicornis*, p. 408, *O. (Tournieria) subparallelus*, p. 409, Caucasus, *bugnioni*, Tunis, p. 410, STIERLIN, MT. Schw. ent. Ges. viii : n. spp.
- Oxyopiathen rittatum*, and *linea-alba*, Thoms., noticed, referred to *Ichthyopiathen*, p. 34, also *clavatum*, Roel., = (*rufo-clavatum*, Auriv.), p. 35 ; ROELOFS, Notes Leyd. Mus. xiv.
- Pachyrhynchus rubro-verrucatus*, N. Guinea, TRYON (1953), n. sp.
- Pachytychius simillimus*, Lalla-Marghnia, *smyrnensis*, Smyrna, *letourneuzi*, Ramleh, *abeillei*, Jerusalem, *siculus*, Sicily, DESBROCHERS, p. 30, Frelon, i, n. spp.
- Pagiophloeus*, n. g., *Hylobiini*, p. 195, type *Aclees pacca*, Fab., with *P. javanicus*, p. 196, *rühli*, p. 197, n. spp., Java ; FAUST, S. E. Z. liii.
- Pandeteius angustirostris*, Venezuela, FAUST, p. 5, S. E. Z. liii, n. sp.
- Pantorhytes*, n. g., *Pachyrhynchinarum*, for *Pachyrhynchus chrysomelas*, Montr., and *P. batesi*, n. sp., New Guinea ; FAUST, p. 193, S. E. Z. liii.
- Parameleus*, n. g., *Hylobiini*, p. 33, for *P. stевensii*, p. 34, *insignatus*, *neglectus*, p. 35, n. spp., Venezuela ; FAUST, S. E. Z. liii.
- Paraphilernus*, n. g., for *Philernus bilunulatus*, Db.; DESBROCHERS, p. 71, Frelon, ii.
- Paraplinthus*, n. g., for *Plinthus carinatus*, Bob.; FAUST, p. 49, S. E. Z. liii.
- Parascytopus baudii*, Calabria, STIERLIN, p. 361, MT. Schw. ent. Ges. viii, n. sp.
- Paratasis viridiænea*, Java, HELLER, p. 269, Notes Leyd. Mus. xiv, n. sp.
- Pelrorhinus proximus*, p. 134, *crassus*, p. 135, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) vii, n. spp.
- Pentarthrinus*, n. g., *Oossonini*, p. 698, for *Amaurorhinus nitens*, Horn, and *P. parvicollis*, p. 699, *piceus*, *atrolucens*, p. 700, n. spp., N. America ; CASEY, Ann. N. York Ac. vi.



- Pephricus umbratus*, W. Australia, p. 231, *squalidus*, S. Australia, p. BLACKBURN, Tr. R. Soc. S. Austr. xv, n. spp.
- Peritelus lostia*, Sardinia, DESBROCHERS, Frelon, ii, p. 88; *P. vit* Sicily, DESBROCHERS, p. 7, t. c. : n. spp.
- Phacepholis albaria*, Venezuela, FAUST, p. 6, S. E. Z. liii, n. sp.
- Phænoderus*, n. g., near *Siderodactylus*, for *P. distinctus*, n. sp., S. Africa; PÉRINGUEY, Tr. S. African Phil. Soc. vi (2), p. 69.
- Phyllobius brevis*, Gyll., = (*emgei*, Stierl.); REITTER, p. 239, Wien. Z. xi.
- P. siculus*, Sicily, STIERLIN, p. 360, MT. Schw. ent. Ges. viii; *siculus*, Sicily, BAUDI, p. 156, Nat. Sicil. xi; *P. delagrangei* locality), DESBROCHERS, p. 3, Frelon, ii : n. spp.
- Phyrdenus bullatus*, Arizona, CASEY, p. 458, Ann. N. York Ac. n. sp.
- Phytobius griseomicans*, N. America, SCHWARZ, p. 165, P. E. Soc. W ii, n. sp.
- Phytoscaphus*, = (*Rhyppochromus*, Motsch.); FAUST, p. 47, S. E. Z. lii
- P. interstitialis*, p. 215, *P. ? setosus*, p. 216, Laos, AURIVILLIUS, N. A Mus. Paris (3) iii; *P. leporinus*, Sumatra, FAUST, p. 193, S. E. liii : n. spp.
- Pisnomias limbatellus*, p. 66, *sumptuosus*, p. 67, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2); *P. desgodinsi*, p. 115, Tibet, *fa* p. 116, *trapezicollis*, p. 117, China, FRIVALDSZKY, Term. füze xv : n. spp.
- Platyopisthen*, n. g., for *Stenophida* (sub. *Oxyopisthen*) *suturale*, R ROELORS, p. 134, Notes Leyd. Mus. xiv.
- Plesiobaris*, n. g., p. 509, for *P. signatipes*, p. 510, *œmula*, p. 512, *disju* p. 513, n. spp., N. America, and including *Baridius T-signum*, I and *Pseudobaris albilateralis*, Lec.; CASEY, Ann. N. York Ac. vi.
- Polydrusus pulchellus*, Dalmatia, STIERLIN, p. 363, MT. Schw. ent. viii; *P. delagrangei*, Asia Minor, DESBROCHERS, p. 1, Frelon, n. spp.
- Polymicrus*, n. g., *Hylobiinorum*, for *P. tessellatus*, p. 36, *tuitus*, p. 37, n. Venezuela; FAUST, S. E. Z. liii.
- Polyphrades tumidulus*, p. 51, *rugulosus*, p. 52, Australia, BLACKBURN, R. Soc. S. Austr. xvi, n. spp.
- Promecops luteus*, p. 25, *jucundus*, p. 26, *olivieri*, p. 27, *stimulans*, p. Venezuela, FAUST, S. E. Z. liii, n. spp.
- Promecotarsus*, n. g., near *Smicronyx*, p. 408, for *P. maritimus*, p. *densus*, *fumatus*, p. 410, n. spp., N. America; CASEY, N. York Ac. vi.
- Proxyrodes*, n. g. (*Otiiorhynchini*, near *Proxyrus*), for *P. maculatus*, n. Australia; BLACKBURN, p. 48, Tr. R. Soc. S. Austr. xvi.
- Prypnus* (?) *squamosus*, N. S. Wales, BLACKBURN, p. 115, P. Linn. N.S.W. (2) vii, n. sp.
- Pseudaclees*, n. g., for *Hylobius fasciatus*, Pasc.; FAUST, S. E. Z. p. 50.

- Pseudanchonus*, n. g., *Heilipinarum*, for *P. æquatorius*, n. sp., Ecuador ; FAUST, p. 203, S. E. Z. liii.
- Pseudobaris luctuosa*, Florida, *discreta*, Texas, p. 554, *fausta*, Arizona, p. 555, *lugubris*, p. 557, *calata*, p. 559, New Mexico, CASEY, Ann. N. York Ac. vi, n. spp.
- Pseudobarynotus*, n. g., for *laticeps*, Desb. ; DESBROCHERS, p. 102, Frelon, i (cf. FAUST, S. E. Z. liii, p. 52).
- Pseudocholus bivittatus*, p. 224, *lacordairei*, p. 225, New Guinea, *viridimicana*, Amboina, p. 226, FAUST, S. E. Z. liii, n. spp.
- Pseudopentarthrum robustum*, *simplex*, N. America, CASEY, Ann. N. York Ac. vi, n. spp.
- Psomus*, n. g., *Zygopini*, near *Acoptus*, for *P. politus*, n. sp., Indiana ; CASEY, p. 458, Ann. N. York Ac. vi.
- Ptochus interruptus*, Ephesus, p. 122, *vagepictus*, Peloponnesus, p. 123, DESBROCHERS, Frelon, i, n. spp.
- Pycnobaris*, n. g., p. 514, for *Baris pruinosa*, Lec., and *P. squamotecta*, Texas, n. sp., p. 515 ; CASEY, Ann. N. York Ac. vi.
- Raymondia* referred to *Erirhinides* ; DESBROCHERS, p. 70, Frelon, ii.
- Rhadinomerus*, n. g., for *Mechistocerus* (? *Berosiris*) *mastersi*, Pasc. ; FAUST, p. 46, S. E. Z. liii.
- R. vigilans*, p. 215, *mæstus*, *solidus*, p. 216, *simplex*, p. 217, Sumatra, FAUST, S. E. Z. liii, n. spp.
- Rhamphocolus*, n. g., near *Rhyncolus*, p. 702, for *R. tenuis*, n. sp., Texas, p. 703 ; CASEY, Ann. N. York Ac. vi.
- Rhinaria tibialis*, p. 136, *debilis*, p. 138, Victoria, BLACKBURN, P. Linn. Soc. N.S.W. (2) vii, n. spp.
- Rhinochenus stigma*, metamorphoses ; DECAUX, p. 202, Le Nat. 1892.
- Rhinochrosis*, n. g., near *Mylacus*, p. 121, for *R. subglobatus*, n. sp., Tangier, p. 122, DESBROCHERS, Frelon, i.
- Rhynchites interpunctatus*, Steph., distinguished from *alliaris* ; THOMSON, p. 1773, Opusc. ent. xvi. *R. seminiger*, characters of ; REITTER, p. 186, Wien. ent. Z. xi.
- Rhyncholus syriacus*, Syria, p. 80, *dalmatinus*, Dalmatia, p. 81, DESBROCHERS, Frelon, ii ; *R. pallens*, p. 703, *spretus*, *dilatatus*, p. 704, *relictus*, p. 705, *nimius*, p. 706, *discors*, p. 707, N. America, CASEY, Ann. N. York Ac. vi : n. spp.
- Rhyparonotus*, n. g., *Anchonina*, p. 33, for *R. mendax*, p. 54, *jekeli*, p. 55, Venezuela, n. spp. ; FAUST, Deutsche e. Z. 1892.
- Rhytirhinus confusus*, Greece, p. 8, *carthagenensis*, Spain, p. 9, *varipes*, p. 10, *monstruosus*, p. 11, Algeria, DESBROCHERS, Frelon, ii, n. spp.
- Ryssematus ovalis*, Texas, CASEY, p. 443, Ann. N. York Ac. vi, n. sp.
- Schizonotus*, n. g., *Erirhinini*, p. 708, for *S. cactus*, n. sp., California, p. 709 ; CASEY, Ann. N. York Ac. vi.
- Sciophilus subnudus*, Greece, DESBROCHERS, p. 114, Frelon, i, n. sp.
- Seidlitzia*, n. g., for *Liophlæus maroccanus*, Fairm. ; DESBROCHERS, p. 93, Frelon, i (cf. *Alophus*, *suprà*).

- Sepiomus*, n. g., *Cyphicerinarum*, p. 211, type *Episomus parallelus*, Ch with *S. frontalis*, Cambodia, p. 212, *tuberculatus*, Battambang, p. 212, AURIVILLIUS, N. Arch. Mus. Paris (3) iii.
- Siderodactylus elegans*, *egregius* (*simplicipes*, olim.), p. 68, *opalinus*, p. 68, S. W. Africa; PÉRINGUEY, Tr. S. African Phil. Soc. vi (2).
- Simophorus*, n. g., *Phyllobiinarum*, for *S. pustulosus*, n. sp., VENEZUELA FAUST, S. E. Z. liii, p. 19.
- Sipalus aurivilli*, Congo, DUVIVIER, p. 166, Ann. Ent. Belg. xxxvi, n. sp.
- Smicronyz lineolatus*, p. 385, *quadrifer*, p. 388, *profusus*, p. 388, *intricatus*, p. 390, *imbricatus*, p. 391, *silaceus*, p. 392, *spurcus*, p. 394, *pleuralis*, p. 395, *connicens*, p. 398, *fiducialis*, p. 398, *congestus*, p. 401, *sagittatus*, p. 402, *sculpticollis*, *instabilis*, p. 402, *apionides*, *perpusillus*, p. 405, *defricans*, p. 406, *gibbistrotris*, *squal* p. 407, N. America, CASEY, Ann. N. York Ac. vi, n. spp.
- Sophonopterus*, n. g., near *Mechistocerus*, for *S. humeralis*, n. sp., SUMATRA FAUST, p. 214, S. E. Z. liii.
- Sphenocorynus scutellatus*, Sumatra, FAUST, p. 227, S. E. Z. liii, n. sp.
- Sphenophorus cinerascens*, Motsch., referred to *Trochorhopalus*; FAUST, p. 50, S. E. Z. liii.
- Stenancylus*, n. g., *Cossonini*, near *Rhyncolus*, for *S. colomboi*, n. sp., Florida; CASEY, p. 694, Ann. N. York Ac. vi.
- Stenophida* (sub *Oxyopisthen*) *suturale*, Roel., = (*trilineata*, Aurivillius), Roelofs, p. 36, Notes Leyd. Mus. xiv.
- Stethobaris incompta*, p. 655, *congermana*, *egregia*, p. 657, N. America, CASEY, Ann. N. York Ac. vi, n. spp.
- Stictobaris*, n. g. (*Barini*), p. 516, for *S. pimalis*, p. 517, *subacuta*, p. 517, n. spp., N. America, and *Onychobaris cribrata*, Lec.; CASEY, Ann. N. York Ac. vi.
- Stigmatotrachelus placidus*, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2) p. 70, n. sp.
- Strophomorphus uniformis*, Syria, DESBROCHERS, p. 117, Frelon, i, n. sp.
- Styphlus ursus*, Greece, DESBROCHERS, p. 89, Frelon, ii, n. sp.
- Sympiezomias basalis*, p. 207, Siam, *setosus*, Laos, p. 208, AURIVILLIUS, N. Arch. Mus. Paris (3) iii, n. spp.
- Synthlibonotus*: systematic position discussed, FAUST, p. 17, S. E. Z. liii, p. 17, *rufipes*, p. 17, *scapha*, *mucronotus*, p. 18, Venezuela, FAUST, S. E. Z. liii, n. spp.
- Tanymecus* and allies, characters tabulated; FAUST, S. E. Z. liii, p. 5.
- T. (Esamus) piliscapus*, Cambodia, AURIVILLIUS, p. 208, N. Arch. Mus. Paris (3) iii, n. sp.
- Temnoschoita eruditus*, *basipennis*, Congo, DUVIVIER, Ann. Ent. Belg. xxxvi, n. spp.
- Tentegia*, Pasc., characters and position; FAUST, p. 181, S. E. Z. liii.
- T. basalis*, p. 181, *ingrata*, p. 182, *sana*, p. 183, Australia, FAUST, S. E. Z. liii, n. spp.
- Thylacites subvittatus*, Spain, p. 110, *cretaceus*, p. 111, *subahenus*, p. 111, Algeria, DESBROCHERS, Frelon, i, n. spp.

- Thysanocnemis graphica*, p. 425, *squamiger*, *horridula*, p. 426, N. America, CASEY, Ann. N. York Ac. vi, n. spp.
- Timus*, n. g., near *Siderodactylus*, for *T. simplex*, p. 128, *planiceps*, p. 129, n. spp., S. Africa; PÉRINGUEY, Tr. S. African Phil. Soc. vi (2).
- Titinia* and *Idaspora* discussed; BLACKBURN, p. 117, P. Linn. Soc. N.S.W. (2) vii.
- T. brevicollis*, p. 118, *lata*, *T. (Idaspora?) eremita*, p. 119, *bicolor*, p. 120, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) vii, n. spp.
- Trachyphlæus scabriculus* and *laticollis* are the sexes of one species; GUILLEBEAU, p. cclv, Bull. Soc. Ent. Fr. lxi.
- Tragopus fossulatus*, Celebes, *brevis*, p. 218, *sulcifrons*, p. 219, Java, FAUST, S. E. Z. liii, n. spp.
- Trepobaris*, n. g., for *T. elongata*, n. sp., Texas; CASEY, p. 519, Ann. N. York Ac. vi.
- Trichobaris insolita*, p. 565, *compacta*, p. 566, *cylindrica*, p. 567, CASEY, Ann. N. York Ac. vi, n. spp.
- Trigonosomus*, n. g., near *Rhinochenus*, for *T. draco*, n. sp., New Guinea; FAUST, p. 220, S. E. Z. liii.
- Trochorhopalus sumatranus*, Sumatra, FAUST, p. 227, S. E. Z. liii, n. sp.
- Tychius longierus*, p. 99, *parallelogrammus*, p. 100, Algeria, DESBROCHERS, Frelon, ii; *T. soltau*, p. 416, *lamellosus*, p. 418, *prolixus*, p. 419, *variegatus*, p. 420, *simplex*, *sibinoides*, p. 421, *mica*, p. 422, *subfasciatus*, p. 423, *hispidus*, p. 424, N. America, CASEY, Ann. N. York Ac. vi : n. spp.
- Tyloderma angustula*, p. 451, *contusa*, p. 452, *rufescens*, p. 454, *subpubescens*, p. 455, N. America, CASEY, Ann. N. York Ac. vi, n. spp.
- Xanthochelus miscellaneus*, Lower India, FAUST, S. E. Z. liii, p. 48, n. sp.
- Yuccaborus sharpi*, p. 688, Mexico, *grossus*, Texas, p. 689, CASEY, Ann. N. York Ac. vi, n. spp.
- Zygops suffusus*, Texas, CASEY, p. 459, Ann. N. York Ac. vi.

## CERAMBYCIDÆ.

- [Cf. BALBI (31), BATES (36), BLACKBURN (90, 93, 94), BRONGNIART (133), CASEY (161), DISTANT (210, 216), DUVIVIER (230, 231), FAIRMAIRE (262, 266, 268, 269), FRIVALDSZKY (309, 310), GAHAN (315, 316), GESTRO (324, 334), LAMÉRE (534), NONFRIED (644, 645, 647, 648), OLLIFF (655), PÉRINGUEY (672, 673), PIC (677, 678, 679, 681, 683, 686, 688, 691), POLL (697), REITTER (725), RITSEMA (760, 763, 764), THÉRY (921), VILLARD (976).]
- Acanthoderes nigrilarsis*, White, = (*sylvanus*, Bates); GAHAN, p. 264, Tr. E. Soc. 1892.
- A. piperatus*, p. 262, pl. xii, fig. 4, *signatus*, p. 263, fig. 3, Mexico, GAHAN, Tr. E. Soc. 1892, n. spp.
- Acmaeops*: synonymy of the N. American species; CASEY, p. 38, Ann. N. York Ac. vi.
- A. variipes*, California, CASEY, p. 38, Ann. N. York Ac. vi, n. sp.

- Acyphoderes cribricollis*, Mexico, BATES, p. 160, pl. vi, fig. 6, Tr. E. 1892, n. sp.
- Elara severa*, Congo, DUVIVIER, p. 360, Ann. Ent. Belg. xxxvi, n. 1.
- Ayada*, n. g., near *Callidium*, FAIRMAIRE, p. clxxi, for *A. clavico* n. sp., Madagascar; FAIRMAIRE, Bull. Soc. Ent. Fr. lxi.
- Alphitopola robecchii*, Somaliland, GESTRO, p. 786, Ann. Mus. Genov. xii; *A. lameerei*, Gaboon, DUVIVIER, p. 351, Ann. Ent. Belg. xx: n. spp.
- Anatinomma*, n. g., near the *Piezocrides*, p. 150, for *A. alveolatum*, n. Mexico, p. 151, pl. v, fig. 8; BATES, Tr. E. Soc. 1892.
- Ancylocera rubella*, Mexico, BATES, p. 170, pl. vii, fig. 8, Tr. E. Soc. 1 n. sp.
- Aneflus cylindricollis*, p. 147, pl. v, fig. 1, *A. ? fulvipennis*, fig. 2, p. Mexico, BATES, Tr. E. Soc. 1892, n. spp.
- Anisopodus brevis*, Mexico, GAHAN, p. 266, pl. xii, fig. 12, Tr. E. Soc. 1 n. sp.
- Anthophilax subtrittata*, Colorado, CASEY, p. 37, Ann. N. York Ac. vi, 1.
- Anybostetha quedenfeldti*, Congo, DUVIVIER, Ann. Ent. Belg. xxxvi, 1 n. sp.
- Aphneope quadrimaculata*, Queensland, POLL, p. 220, pl. xiii, fi Tijdschr. Ent. xxxiv, n. sp.
- Apilocera breviformis*, pl. vi, fig. 15, *yucateca*, fig. 16, Mexico, B. p. 165, Tr. E. Soc. 1892, n. spp.
- Aposites lanaticollis*, S. Australia, p. 61, *niger*, W. Australia, p. 62, BL BURN, Tr. R. Soc. S. Austr. xv, n. spp.
- Arctolamia fuscata*, Burma, GESTRO, p. 222, Ann. Mus. Genov. (2) x, 1.
- Aristobia pulcherrima*, S. China, NONFRIED, p. 94, Ent. Nachr. xviii, 1.
- Asemum striatum*, minute structure of elytra; HOFFBAUER (405).
- A. glubrellum*, Mexico, BATES, Tr. E. Soc. 1892, p. 146, pl. v, fig. 6, 1.
- Athetesis convergens*, Mexico, BATES, p. 171, pl. vii, fig. 10, Tr. E. 1892, n. sp.
- Axestoleus*, n. g., near *Batyle*, p. 180, for *Batyle meridionalis*, Bates, *Axestoleus quinquepunctatus*, n. sp., Mexico, pl. vii, fig. 16, p. BATES, Tr. E. Soc. 1892.
- Batyle lavicollis*, Mexico, BATES, p. 181, pl. vii, fig. 15, Tr. E. Soc. 1 n. sp.
- Bebius variegatus*, Victoria, BLACKBURN, p. 64, Tr. R. Soc. S. Austr n. sp.
- Bethelium tricolor*, S. Australia, p. 56, *mundum*, N. S. Wales, p. 57, BL BURN, Tr. R. Soc. S. Austr. xv, n. spp.
- Brachyta bifasciata*, n. var. *caucasica*; ROST, Ent. Nachr. xviii, p. 81.
- Callichroma splendidum*, notes on; HAMILTON, p. 38, Canad. Ent. xxi.
- Callimus akbesianus*, Syria, PIC, p. 416, Ann. Soc. Ent. Fr. lxi, n. sp.
- Callipogon*: monograph of; NONFRIED, pp. 17-24, pl. iii, Berl. Zeit. xxxvii.
- C. hauseri*, p. 20, *friedlaenderi*, p. 22, Honduras, NONFRIED, Berl. 1 Zeit. xxxvii, n. spp.

- Camira* : was made from a composite insect, and the name should be deleted ; RITSEMA, p. 54, Notes Leyd. Mus. xiv.
- Centrodera nevadica*, male noticed ; CASEY, p. 36, Ann. N. York Ac. vi.
- Cerambyx* : characters of the European species ; BELON, pp. 70 & 71, Échange, 1892.
- C. lucasi*, Siam, BRONGNIART, p. 238, pl. x, fig. 4, N. Arch. Mus. Paris (3) iii, n. sp.
- Cerosterna ocellata*, Siam, NONFRIED, p. 379, Berl. Ent. Zeit. xxxvi, n. sp.
- Championa badeni*, Mexico, BATES, p. 170, Tr. E. Soc. 1892, n. sp.
- Charisia*, new name to replace *Charis*, Newm. ; CHAMPION, p. 161, Tr. E. Soc. 1892.
- Charisia nigerrima*, Mexico, BATES, p. 160, pl. vi, fig. 8, Tr. E. Soc. 1892, n. sp.
- Chreostes cinerascens*, S. W. Africa, PÉRINGUEY, p. 80, Tr. S. African Phil. Soc. vi (2), n. sp.
- Chrotoma*, n. g., near *Hesperophanes*, for *O. dunniana* n. sp., Texas ; CASEY, p. 27, Ann. N. York Ac. vi.
- Chrysoprasis guerrensis*, Mexico, BATES, p. 167, pl. vii, fig. 3, Tr. E. Soc. 1892, n. sp.
- Cirrhicera conspicua*, pl. xii, fig. 13, *basalis*, fig. 5, Mexico, GAHAN, p. 269, Tr. E. Soc. 1892, n. spp.
- Closteromerus amabilis*, S. W. Africa, PÉRINGUEY, p. 78, Tr. S. African Phil. Soc. vi (2), n. sp.
- Clytanthus hololeucus*, Mexico, BATES, p. 163, Tr. E. Soc. 1892, n. sp.
- Clytus bifarius*, Heyd., = (*reitteri*, Théry) ; HEYDEN, p. cxxxi, Bull. Soc. Ent. Fr. lxi. *C. ciliciensis*, Chev., = (*bifarius*, Heyd.) ; PIC, p. cxlvii, Bull. Soc. Ent. Fr. lxi. *C. arietis*, metamorphoses ; XAMBEU, Mœurs, ii, p. 23.
- C. (Sphegastes) reitteri*, Syria, *mayeti*, Siberia, THÉRY, p. xcvi, Bull. Soc. Ent. Fr. lxi ; *C. (Xylotrechus) villioni*, Japan, VILLARD, p. li, Bull. Soc. Ent. Fr. lxi : n. spp.
- Conisonia leprieuri*, Algeria, PIC, p. lii, Bull. Soc. Ent. Fr. lxi, n. sp.
- Coptops hypocrita*, Gaboon, LAMERRE, p. 506, Ann. Ent. Belg. xxxvi, n. sp.
- Cordylomera annulicornis*, Obock, FAIRMAIRE, p. 122, Rev. d'Ent. xi, n. sp.
- Cortodera umbripennis*, ♂ described ; REITTER, p. 239, Wien. ent. Z. xi.
- C. reitteri*, Sarepta, PIC, p. 43, Échange, 1891, n. sp.
- Cosmisoma nudicorne*, Panama, BATES, p. 166, pl. vii, fig. 2, Tr. E. Soc. 1892, n. sp.
- Criodion fulvopilosum*, Brazil, p. 23, *antennatum*, Venezuela, p. 24, *dejeani*, Brazil, *tuberculatum*, Peru, p. 25, *testaceum*, p. 26, *quadrinaculatum*, *sommeri*, p. 27, Brazil, GAHAN, Ann. N. H. (6) ix : n. spp.
- Crioprosopus gauveri*, Mexico, BATES, p. 172, Tr. E. Soc. 1892, n. sp.
- Crossidius longipennis*, New Mexico, p. 31, *crassipes*, Washington, p. 32, *nitidicollis*, Arizona, p. 33, CASEY, Ann. N. York Ac. vi ; *C. militaris*, p. 177, pl. vii, fig. 14, *agrotus*, p. 178, Mexico, BATES, Tr. E. Soc. 1892 : n. spp.
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- Crossotus sublineatus*, Somaliland, GFSTRO, p. 788, Ann. Mus. Gen. xii ; *C. klugii*, Transvaal, DISTANT, Naturalist Transvaal, p. 205 fig. 8 : n. spp.
- Cyclocranium*, n. g. (*Ametrocephalina*), p. 219, for *C. swierstræ*, Victoria, pl. xiii, fig. 1, p. 230 ; POLI, Tijdschr. Ent. xxxiv.
- Cyrtognathus siamensis*, Siam, NONFRIED, p. 375, Berl. Ent. Zeit. : n. sp.
- Dalterus*, n. g., *Anauxesides*, p. 125, for *D. auberti*, n. sp., Obock, p. FAIRMAIRE, Rev. d'Ent. xi.
- Daramus*, n. g., near *Tetropium*, for *D. serricornis*, n. sp., Obock ; MAIRE, p. 121, Rev. d'Ent. xi.
- Delagrangus*, n. g., near *Deilus*, p. xciii, for *D. angustissimus*, Syria, p. xciv ; PIC, Bull. Soc. Ent. Fr. lxi.
- Deliathis diluta*, Mexico, GAHAN, p. 257, pl. xii, fig. 11, Tr. E. Soc. n. sp.
- Deltaspis rufostigma*, p. 173, *fulva*, p. 174, *tuberculicollis*, p. 175, M BATES, Tr. E. Soc. 1892, n. spp.
- Derobrachus smithi*, Mexico, BATES, Tr. E. Soc. 1892, p. 144, n. sp.
- Dichostates molossus*, Congo, DUVIVIER, p. 359, Ann. Ent. Belg. n. sp.
- Dichostethes nebulosus*, Obock ; FAIRMAIRE, p. 124, Rev. d'Ent. xi.
- Didymocantha novica*, Victoria, BLACKBURN, p. 233, Tr. R. Soc. Austr. xv, n. sp.
- Distenia lineatopora* and *hægei*, variation noticed ; BATES, pp. 156 Tr. E. Soc. 1892.
- D. trifasciata*, Mexico, BATES, p. 157, pl. vi, fig. 1, Tr. E. Soc. n. sp.
- Dorcadion equestre*, variation described and figured ; KRAATZ, p. pl. iii, figs. 3-22, Deutsche z. Z. 1892. *D. uhagoni*, n. var. p. THÉRY, p. xcvi, Bull. Soc. Ent. Fr. lxi.
- D. cervæ*, Hungary, FRIVALDSZKY, p. 133, Term. füzetek, xv, n. sp.
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- Ecyrus* and *Ebaceres* : notes on the composition of ; GAHAN, p. 2 E. Soc. 1892.
- E. arcuatus*, Mexico, GAHAN, p. 259, Tr. E. Soc. 1892, n. sp.
- Elaphidion arizonense*, p. 28, *levettei*, p. 29, Arizona, CASEY, Ann. N. Ac. vi, n. spp.
- Elytroleptus scabricollis*, Mexico, BATES, p. 172, pl. vii, fig. 7, Soc. 1892, n. sp.
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- Euderces cribripennis*, Mexico, BATES, p. 165, pl. vi, fig. 14, Tr. E. Soc. 1892, n. sp.
- Eupogonius tomentosus*, habits : HAMILTON, p. 39, Canad. Ent. xxiv.
- Euryptera unicolor*, pl. vi, fig. 3, Mexico, *planicoxis*, Panama, fig. 5, BATES, p. 159, Tr. E. Soc. 1892, n. spp.
- Exocentrus ruficollis*, Congo, LAMERRE, p. 508, Ann. Ent. Belg. xxxvi, n. sp.
- Gasponia*, n. g., near *Gnathænia*, for *G. gaurani*, n. sp., Obock ; FAIRMAIRE, p. 123, Rev. d'Ent. xi.
- Gaurotes multiguttatus*, Mexico, BATES, p. 158, pl. vi, fig. 2, Tr. E. Soc. 1892, n. sp.
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- Gnatholea* (sub *Hesperophanes*) *liturifer*, Wlk., = (*denticollis* and *picipicornis*), FAIRM.; FAIRMAIRE, p. 120, Rev. d'Ent. xi.
- Gnomidolon denticorne*, Panama, BATES, p. 155, Tr. E. Soc. 1892, n. sp.
- Gracilia pygmæa*, habits ; VERHOEFF, p. 298, Ent. Nachr. xviii.
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- Hecyrida lutulenta*, Somaliland, GESTRO, p. 789, Ann. Mus. Genov. (2) xii, n. sp.
- Herpetophygus fasciatus*, S. Africa, PÉRINGUEY, p. 79, Tr. S. African Phil. Soc. vi (2).
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- Hippopsis imitans*, Congo, DUVIVIER, p. 364, Ann. Ent. Belg. xxxvi, n. sp.
- Homæophlæus*, n. g., near *Onychocerus*, for *H. licheneus*, n. sp., Mexico, pl. xii, fig. 6 ; GAHAN, p. 261, Tr. E. Soc. 1892.
- Hylotrupes litigiousus*, N. America, CASEY, p. 25, Ann. N. York Ac. vi, n. sp.
- Hyperplatys californica*, Sta. Cruz, CASEY, p. 51, Ann. N. York Ac. vi, n. sp.
- Hysterarthron* belongs to *Lagriidæ* ; RITSEMA, p. 54, Notes Leyd. Mus. xiv.
- Ibidion ruatanum*, Honduras, pl. v, fig. 15, p. 155, *griseolum*, fig. 13, *gaumeri*, fig. 16, p. 156, Mexico, BATES, Tr. E. Soc. 1892, n. spp.
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- Ischnocnemis cyaneus*, BATES, p. 178, Tr. E. Soc. 1892, n. sp.
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- Lasiogaster*, n. g., *Monodesmina*, p. 255, for *L. costipennis*, n. sp., British Honduras, p. 256 ; GAHAN, Tr. E. Soc. 1892.



- Leipus bedeli*, Algeria, PIC, p. 289, Abeille, xxvii; *L. setipes*, min Texas, CASEY, p. 48, Ann. N. York Ac. vi; *L. batesi*, Mexico, G p. 265, pl. xii, fig. 9, Tr. E. Soc. 1892 : n. spp.
- Leontium binotatum*, Siam, BRONGNIART, p. 245, pl. x, fig. 9, N. Mus. Paris (3) iii, n. sp.
- Leptostylus arciferus*, Mexico, GAHAN, p. 265, pl. xii, fig. 8, Tr. 1892, n. sp.
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- M. bivittatus*, Mexico, GAHAN, Tr. E. Soc. 1892, p. 272, pl. xii, n. sp.
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- Metaleptus comis*, Mexico, BATES, p. 175, pl. vii, fig. 9, Tr. E. Soc n. sp.
- Microtragus quadrimaculatus*, Queensland, BLACKBURN, p. 235, Soc. S. Austr. xv, n. sp.
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- Necydalis major* and *panzeri*, distinctive characters ; CHOBOUT, Échange, No. 61, 1890, p. 100.
- Nemophas malachiticus*, Sumatra, NONFRIED, Berl. Ent. Zeit. xxxvi, n. sp.
- Neoclytus smithi*, Mexico, BATES, p. 164, pl. vi, fig. 9, Tr. E. Soc. 1892, n. sp.
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- Olenecamptus macari*, Trop. Africa, LAMÈERE, p. 507, Ann. Ent. Belg. xxxvi, n. sp.
- Ophistomis xanthotelus*, Mexico, BATES, p. 158, pl. vi, fig. 4, Tr. E. Soc. 1892, n. sp.
- Opsidota guttata*, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. xv, n. sp.
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- Phaea unicolor*, Mexico, GAHAN, p. 267, Tr. E. Soc. 1892, n. sp.
- Phryneta nupera*, Limpopo Riv., PÉRINGUEY, p. 133, Tr. S. African Phil. Soc. vi (2), n. sp.
- Phyllocnema speciosa*, S. W. Africa, PÉRINGUEY, p. 78, Tr. S. African Phil. Soc. vi (2) ; *P. pretiosa*, Limpopo Riv., PÉRINGUEY, p. 130, t. c. : n. spp.

- Phymatodes obliquus*, California, CASEY, p. 26, Ann. N. York Ac. vi, *Phytacia* (*Coptosia*) *trilinea*; PIC, p. cxii, Bull. Soc. Ent. Fr. lxi; *F. Araxes Valley*, REITTER, p. 64, Wien. ent. Z. xi, n. spp.
- Plocoderus incertus*, Somaliland, GESTRO, p. 784, Ann. Mus. Genc. xii, n. sp.
- Pœcilomallus*, n. g., *Elaphidiina*, for *P. palpalis*, n. sp., Mexico, fig. 6; BATES, p. 151, Tr. E. Soc. 1892.
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- P. desvauxi*, p. cclix, *moissoni*, p. cclx, Algeria, PIC, Bull. Soc. Ent. F. n. spp.
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- R. meeskei*, New Mexico, CASEY, p. 30, Ann. N. York Ac. vi; *R. e* Mexico, BATES, p. 166, pl. vii, fig. 1, Tr. E. Soc. 1892 : n. spp.
- Rhytidodera siamica*, Siam, NONFRIED, p. 378, Berl. Ent. Zeit. : n. sp.
- Rosalia lameerei*, Siam, BRONGNIART, p. 243, pl. x, figs. 7 & 8, N. Mus. Paris (3) iii.
- Saperda phoca*, habits; DELAGRANGE, Bull. Soc. Ent. Fr. lxi, p. ccc *Sisyrium* : note on characters, p. 58, and table of species, p. 61; BURN, Tr. R. Soc. S. Austr. xv.
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- Spalacopsis tezana*, Texas, CASEY, p. 51, Ann. N. York Ac. vi; *S. s* fusa, Mexico, GAHAN, p. 260, Tr. E. Soc. 1892 : n. spp.
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- T. dimidiata*, Mexico, BATES, Tr. E. Soc. 1892, pl. vii, fig. 13, n. sp.
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- Valenus*, n. g., near *Lepturges*, p. 49, for *V. inornatus*, n. sp., Texas, CASEY, Ann. N. York Ac. vi.
- Volumnia transversalis*, Trop. Africa, LAMEERE, p. 508, Ann. Ent. xxxvi, n. sp.
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- Xoanodera pasciei*, Siam, BRONGNIART, p. 239, N. Arch. Mus. Pa. iii, n. sp.
- Xylotrechus insignis*, sexual distinctions, CASEY, p. 35, Ann. N. Yo. vi, n. sp.
- Xystrocera parvicollis*, Obock, FAIRMAIRE, p. 120, Rev. d'Ent. x lata, S. W. Africa, PÉRINGUEY, p. 77, Tr. S. African Phil. S (2) : n. spp.
- Zalates pulchra*, Transvaal, PÉRINGUEY, p. 132, Tr. S. African Phi. vi (2), n. sp.
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- Zatrephus nebulosus*, Saïgon, BRONGNIART, p. 240, pl. x, fig. 2, N. Mus. Paris (3) iii, n. sp.
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- [Cf. BLANDFORD (100), DESBROCHERS (199), KNOTEK (500), XA (1022).]
- Hylesinus henscheli*, Herzegovina, KNOTEK, p. 234, Wien. ent. Z. xi, *Hypoborus flvus*, metamorphoses; XAMBEU, Soc. Agricole Pyrén.-c xxxii, p. 473.
- Phlæotribus olea*, metamorphoses; XAMBEU, Soc. Agricole Pyrén.-c xxxii, pp. 477-484.
- Pityophthorus annectens* and *consimilis*, note on; SCHWARZ, p. P. E. Soc. Wash. ii.
- Scolytus*: table of characters of the European; DESBROCHERS, Fré. pp. 10-17. *S. carpini*, habits, DECAUX, p. ccxli, Bull. Soc. Ent. F.
- S. aceris*, Herzegovina, KNOTEK, p. 235, pl. ii, Wien. ent. Z. xi, n. sp.
- Xyleborus perforans*, in the West Indies; BLANDFORD (100).

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- [Cf. DESBROCHERS (203), KOLBE (506), SEMENOW (831), SENNA (837, 838, 839).]
- List of additions to, and notes on the Catalogue of, *Brenthidæ*; SENNA, pp. 38-63.
- Observations on the dimorphic form of male rostrum; SENNA, pp. 30-37, Bull. Ent. Ital. xxiv.
- Agriorrhynchus quadrituberculatus*, Burma, SENNA, p. 470, Ann. Mus. Genov. (2) xii, n. sp.
- Autarcus*, n. g., for *Ceocephalus laticollis*, Perroud; SENNA, p. 59, Bull. Ent. Ital. xxiv.
- Basenius*, n. g., for *B. laticornis*, E. Africa, n. sp.; KOLBE, p. 170, S. E. Z. liii.
- Callipareius*, n. g., near *Cyphagogus*, p. 444, for *C. fœx*, n. sp., Burma, p. 445; SENNA, Ann. Mus. Genov. (2) xii.
- Carcinopisthius*, n. g., for *C. fruhstorferi*, Java, p. 174, *felschei*, Burma, p. 175, n. spp.; KOLBE, S. E. Z. liii.
- Cediocera tristis*, Java, SENNA, p. 183, Notes Leyd. Mus. xiv, n. sp.
- Cerobates sesulcatus*, variation, pp. 449, 450, *canaliculatus*, n. var., *carinensis*, p. 450; SENNA, Ann. Mus. Genov. (2) xii.
- Coptorrhynchus francoisi*, New Hebrides, DESBROCHERS, p. 109, Frelon, i, n. sp.
- Cordus peguanus*, Burma, SENNA, p. 463, Ann. Mus. Genov. (2) xii, n. sp.
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- Diurus ominosus*, Burma, SENNA, p. 492, Ann. Mus. Genov. (2) xii, n. sp.
- Epicoiononeus*, n. g., *Belophorinæ*, p. 476, for *E. femoralis*, n. sp., Burma, p. 478; SENNA, Ann. Mus. Genov. (2) xii.
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- Microsebus*, n. g., p. 168, for *M. pusio*, E. Africa, *adelphus*, Ceylon, n. spp., p. 169; KOLBE, S. E. Z. liii.
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- Prophthalmus versicolor*, Burma, SENNA, p. 466, Ann. Mus. Genov. (2) xii, n. sp.

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- Sebasius* : note on the components of ; KOLBE, p. 171, S. E. Z. liii.
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- [Cf. DUVIVIER (230), FAIRMAIRE (269), LESNE (547).]
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- Eugigas harmandi*, Cochin China, LESNE, p. 227, N. Arch. Mus. (3) iii, n. sp.
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- Phlebotragus prasinus*, Congo, DUVIVIER, p. 59, Ann. Ent. Belg. x n. sp.
- Vitalis*, n. g., near *Platyrrhinus*, for *V. rubricollis*, n. sp., Madaga FAIRMAIRE, Bull. Soc. Ent. Fr. lxi, p. clxxi.

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- [Cf. HEYDEN (402), RILEY (751, 752, 754).]
- Bruchus* : temporary feet in early larvæ ; RILEY, pp. 185 & 186, C Ent. xxiv. *B. fabæ* and *pisi*, metamorphoses ; RILEY & HOW Ins. Life, iv, pp. 297-302. *B. obsoletus*, Say, note on ; HAMI p. 162, Canad. Ent. xxiv. *B. oblectus*, Say, nomenclature habits ; RILEY, Ins. Life, v, pp. 27-33, and note on, with synonym RILEY, p. 291, Canad. Ent. xxiv. *B. albocutellatus*, habits ; H. TON, Ent. News, iii, p. 253.
- B. ruthenicus*, Sarepta, BECKER, p. 69, Bull. Mosc. 1892, n. sp. ?
- Mylabris (Bruchus) orchesioides*, Margelan, HEYDEN, p. 109, Deuts. Z. 1892, n. sp.

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- [Cf. BALBI (31), BLACKBURN (90, 93, 94), CHITTENDEN (168), DEICHERS (204), DUVIVIER (230, 232), EVERTS (260), FAIRMAIRE (FRIVALDSZKY (309), GAHAN (210), GESTRO (325, 331, 335), GOI

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- Food-habits of some N. American *Chrysomelidæ*; CHITTENDEN (168).
- Food-plants of various N. American *Halticidæ*; SCHWARZ, pp. 182-184, P. E. Soc. Wash. ii.
- Halticidæ*: protest against generic names used by SEIDLITZ in *Fauna transylvanica*; WEISE, p. 414, *Deutsche e. Z.* 1892.
- Abirus antennatus*, Burma, JACOBY, p. 912, *Ann. Mus. Genov.* (2) xii, n. sp.
- Achenops facialis*, Transvaal, JACOBY in DISTANT, *Naturalist Transvaal*, p. 204, pl. i, fig. 4, n. sp.
- Acrocrypta discoidalis*, Annam, ALLARD, p. 233, *N. Arch. Mus. Paris* (3) iii, n. sp.
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- Enidea*? *pretorix*, Transvaal, GAHAN in DISTANT, *Naturalist Transvaal*, p. 209, pl. i, fig. 10; *Æ. crassipalpis*, Burma, JACOBY, p. 986, *Ann. Mus. Genov.* (2) xii : n. spp.
- Æthonea*, Baly, is same as *Bonesia*; GAHAN, p. 92, *P. Z. S.* 1892.
- Agelastica*? *flava*, Burma, JACOBY, p. 967, *Ann. Mus. Genov.* (2) xii; *A. viridis*, Mexico, JACOBY, p. 334, *Biol. Centr. Am. Col.* vi (1 supp.) : n. spp.
- Allochroma teapense*, pl. xliii, fig. 2, *flohri*, fig. 5, Mexico, JACOBY, p. 319, *Biol. Centr. Am. Col.* vi (1 supp.), n. spp.
- Allomorpha*, n. g., *Halticidæ*, for *A. sericea*, n. sp., Burma; JACOBY, *Ann. Mus. Genov.* (2) xii.
- Amphimela cyanea*, Bengal, DUVIVIER, p. 420, *Ann. Ent. Belg.* xxxvi, n. sp.
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- Anthiphula*, n. g., between *Galerucina* and *Halticina*, provisionally placed near *Anthipha*, for *A. semifulva*, n. sp., Burma; JACOBY, p. 991, *Ann. Mus. Genov.* (2) xii.
- Antsianaka viridis*, *elegantula*, pl. xxxix, fig. 10, Madagascar, JACOBY, p. 576, *P. Z. S.* 1892, n. spp.
- Aoria nigrita*, p. 904, *fulvifrons*, p. 905, *semicostata*, p. 906, Burma, JACOBY, *Ann. Mus. Genov.* (2) xii : n. spp.
- Aphthona atrovirens*, var. described; WEISE, *Deutsche e. Z.* 1892, p. 411.
- A. nigrilabris*, Bengal, DUVIVIER, p. 426, *Ann. Ent. Belg.* xxxvi; *A. birmanica*, Pegu, JACOBY, p. 920, *Ann. Mus. Genov.* (2) xii : n. spp.
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- Argopistoides*, n. g., p. 931, for *A. septempunctata*, n. sp., Burma, p. 9 JACOBY, Ann. Mus. Genov. (2) xii.
- Arispoda pulcher*, N. Guinea, TRYON (1953), n. sp.
- Asphara madagascariensis*, *brevicornis*, Madagascar, JACOBY, p. P. Z. S. 1892, n. spp.
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- Aulacophora*, auct., divided into genera (two presumably new, cf. *Palpa*, *Orthaulaca*); WEISE, p. 392, Deutsche e. Z. 1892.
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- Aulacoscelis purpurea*, Arizona, HORN, p. 46, Tr. Am. Ent. Soc. xix, n. *Blepharida singularis*, Mexico, JACOBY, p. 347, pl. xliii, fig. 23, Biol. Centr. Am. Col. vi (1 supp.), n. sp.
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- Cassena*, n. g., near *Nisotra*, for *C. celebensis*, p. 389, *ribbei*, p. 390, Celebes, WEISE, Deutsche e. Z. 1892.
- Cassida* : monograph of the French species; DESBROCHERS, Frelon Supp., & ii, pp. 82-87.
- C. thoracica*, p. 19, *sanguinosa*, p. 20, France, *corrota*, *oranensis*, Alger, p. 39, *cerata*, Syria, p. 40, *salsola*, Russia, p. 43, *nitidula*, Alger, p. 44, DESBROCHERS, Frelon, i, Supp.; *C. reitteri*, Caucasus, WEISE, p. 238, Wien. ent. Z. xi; *C. bonnyana*, p. 94, *strigosa*, *fuscopunctata*, p. 95, Centr. Africa, GORHAM, P. Z. S. 1892; *C. (Odontionycha) indica*, Bengal, DUVIVIER, p. 448, Ann. Ent. Belg. xxxvi : n. spp.
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- Ceratia cattigarensis*, Shanghai, p. 397, *tricolora*, Sumatra, *funerea*, Celebes, p. 398, WEISE, Deutsche e. Z. 1892, n. spp.

- Cerophysa fulvicollis*, p. 947, *monstrosa*, p. 948, Burma, JACOBY, Ann. Mus. Genov. (2) xii : n. spp.
- Cerotrus nigromarginatus*, Burma, JACOBY, p. 940, Ann. Mus. Genov. (2) xii, n. sp.
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- Chlamys fœæ*, Burma, JACOBY, p. 887, Ann. Mus. Genov. (2) xii, n. sp.
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- Cladocera spectabilis*, p. 87, *simplex*, p. 88, S. W. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. vi (2) : n. spp.
- Cleoporus lefevrei*, Bengal, DUVIVIER, p. 414, Ann. Ent. Belg. xxxvi ; *C. birmanicus*, p. 914, *plagiatus*, p. 915, Burma, JACOBY, Ann. Mus. Genov. (2) xii : n. spp.
- Cleorina jacobyi*, Bengal, DUVIVIER, p. 415, Ann. Ent. Belg. xxxvi, n. sp.
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- Cynortia violacea*, p. 970, *subcnea*, p. 971, Burma, JACOBY, Ann. J Genov. (2) xii, n. spp.
- Cyphotarsis*, n. g., near *Scelida*, for *C. niger*, n. sp., Mexico, JACOBY, p. Biol. Centr. Am. Col. vi (1 supp.).
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- Derectis*, Clark, = (*Antipha*, Baly) ; JACOBY, Ent. xxv, p. 162.
- Derocrepis pubipennis*, Araxes Valley, REITTER, p. 154, Wien. ent xi, n. sp.
- Diabrotica smithi, peregrina*, pl. xliii, fig. 12, p. 330, *guerreroensis*, fig *blattoides*, p. 331, *quatuor-decimpunctata*, fig. 14, *semiopaca, ri* p. 332, *D. ? antennata*, fig. 15, p. 333, Centr. America, JACOBY, Centr. Am. Col. vi (1 supp.), n. spp.
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- Erytus podagroides*, Ceram, p. 390, *villicus*, Bangkei, p. 391, WEISE, Deutsche e. Z. 1892, n. spp.
- Eulychius nigratarsis*, Madagascar, JACOBY, p. 567, P. Z. S. 1892, n. sp.
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- Euryope notabilis*, S. W. Africa, PÉRINGUEY, p. 86, Tr. S. African Phil. Soc. vi (2), n. sp.
- Euryscopa pusilla*, Texas, p. 16, *subtilis*, California, p. 17, HORN, Tr. Am. Ent. Soc. xix, n. spp.
- Eustetha varians*, Indo-China, ALLARD, p. 233, N. Arch. Mus. Paris (3) iii, n. sp.
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- Galerucella albopilosa*, Burma, JACOBY, p. 969, Ann. Mus. Genov. (2) xii; *G. celebensis*, Celebes, WEISE, p. 404, Deutsche e. Z. 1892; *G. amabilis*, Mexico, pl. xliii, fig. 11, *terminalis*, Panama, JACOBY, p. 327, Biol. Centr. Am. Col. vi (1 supp.): n. spp.
- Galerusoma*, n. g., near *Mimastra*, for *G. apicicornæ*, n. sp., Madagascar; JACOBY, p. 578, P. Z. S. 1892.
- Gonophora parvula*, p. 237, *rugicollis*, p. 238, Burma, GESTRO, Ann. Mus. Genov. (2) x; *G. modiglianii*, Engano, GESTRO, p. 793, *op. cit.* xii: n. spp.

- Gynandrophthalma*, 11-notata, p. 132, *punctatissima*, *viridiceps*, p. Turkestan, WEISE, Deutsche e. Z. 1892; *G. laticollis*, Be DUVIVIER, p. 399, Ann. Ent. Belg. xxxvi; *G. mandarina*, C. LEFÈVRE, p. xciv, Bull. Soc. Ent. Fr. lxi; *G. pictipennis*, p. *decemnotata*, *octomaculata*, p. 884, *birmanica*, p. 885, Burma, JAC Ann. Mus. Genov. (2) xii : n. spp.
- Haltica semenowi*, p. 462, *weissi*, = (*laviuscula*, Weise), *balassogloi*, p. Central Asia, JACOBSON, Hor. Ent. Ross. xxvi, n. spp.
- Haplosomyz rufipennis*, Pedong, DUVIVIER, p. 439, Ann. Ent. Belg. xi *H. orientalis*, p. 962, *ornata*, p. 963, *inornatus*, *varipes*, p. 964, Bt JACOBY, Ann. Mus. Genov. (2) xii : n. spp.
- Hemyloticus*, n. g., *Typophorina*, p. 571, for *H. geniculatus*, n. sp., h gascar, p. 572, pl. xxxix, fig. 6; JACOBY, P. Z. S. 1892.
- Heteraspis viridis*, Burma, JACOBY, p. 86, Ent. xxv, Supp.; *H. par nitidu*, p. 909, *bhamoensis*, p. 910, Burma, JACOBY, Ann. Mus. G (2) xii : n. spp.
- Hispida* of Burma, with many notes; GESTRO, Ann. Mus. Genov. pp. 225-268.
- Hipa elegantula*, Bengal, DUVIVIER, p. 447, Ann. Ent. Belg. xxxvi *megacantha*, p. 249, *cariana*, p. 251, *maculata*, p. 252, *brevic* p. 253, *discicollis*, p. 254, *doriae*, p. 256, *monticola*, p. 257, m p. 259, *paronae*, p. 260, *xanthospila*, p. 261, *platyprioides*, p. 262, *fida*, p. 263, GESTRO, Ann. Mus. Genov. (2) x; *H. rubus*, Guinea, GESTRO, p. 1019, Ann. Mus. Genov. (2) x : n. spp.
- Homophæta simulans*, pl. xlii, figs. 24 & 25, *violacea*, Mexico, J. p. 316, Biol. Centr. Am. Col. vi (1 supp.), n. spp.
- Hoplacerus*, n. g., near *Diphaulaca*, for *H. tibialis*, n. sp., Mexico, pl fig. 21, JACOBY, p. 344, Biol. Centr. Am. Col. vi (1 supp.).
- Hylaspoides*, n. g., near *Hylaspes*, p. 443, for *H. magnifica*, n. sp., Si p. 444; DUVIVIER, Ann. Ent. Belg. xxxvi.
- Hyperacantha flavonigra*, var. described; GAHAN, p. 92, P. 1892.
- Hyperaris distincta*, Bengal, DUVIVIER, p. 411, Ann. Ent. Belg. : n. sp.
- Hyphænia submetallica*, Burma, JACOBY, p. 985, Ann. Mus. Genov. ( n. sp.
- Hyphasis signata*, Bengal, DUVIVIER, p. 429, Ann. Ent. Belg. xxxv *distincta*, p. 936, *intermedia*, *inornata*, p. 937, *balyi*, p. 938, J. Ann. Mus. Genov. (2) xii : n. spp.
- Hypolampsis inornata*, Mexico, JACOBY, p. 323, Biol. Centr. Am. (1 supp.), n. sp.
- Ivongius nigromaculatus*, Madagascar, JACOBY, p. 569, pl. xxxix, P. Z. S. 1892, n. sp.
- Konbirella*, n. g., *Galerucina*, for *K. cardoni*, n. sp., Bengal; DUV p. 438, Ann. Ent. Belg. xxxvi.
- Labidostomis glycyrrhizæ*, note on; BECKER, p. 70, Bull. Mosc. 185 *L. urticarum*, China, FRIVALDSZKY, p. 119, Term. füzetek, xv, n. s.

- Lactica bipustulata*, Burma, JACOBY, p. 919, Ann. Mus. Genov. (2) xii ;  
*L. vittatipennis*, p. 345, pl. xliii, fig. 22, *hidalgoensis*, *L. ? varicornis*,  
 fig. 24, p. 346, Mexico, JACOBY, Biol. Centr. Am. Col. vi (1 supp.) :  
 n. spp.
- Lema melanopa*, habits ; VERHOEFF, p. 298, Ent. Nachr. xviii ; *L. sayi*,  
 habits ; RICHARDSON, p. 240, P. E. Soc. Wash. ii.
- L. rugicollis*, *madagascariensis*, Madagascar, JACOBY, p. 565, P. Z. S. 1892 ;  
*L. pulchella*, S. W. Africa, PÉRINGUEY, p. 82, Tr. S. African Phil.  
 Soc. vi (2) ; *L. mashuana*, S. Africa, PÉRINGUEY, p. 133, t. c. ; *L.*  
*robusta*, p. 869, *mandibularis*, p. 870, *dimidiatipennis*, p. 871, *obscuri-*  
*tarsis*, *birmanica*, p. 872, *few*, *palonensis*, p. 873, Burma, JACOBY, Ann.  
 Mus. Genov. (2) xii ; *L. centromaculata*, Nias I., WEISE, p. 386,  
 Deutsche e. Z. 1892 ; *L. smithi*, *fulvipes*, p. 341, *quinquelineata*,  
*sponsa*, p. 342, Mexico, JACOBY, Biol. Centr. Am. Col. vi (1 supp.) :  
 n. spp.
- Lina* : minute structure of elytra ; HOFFBAUER (405).
- Longitarsus rangoonensis*, p. 920, *birmanicus*, p. 921, Burma, JACOBY, Ann.  
 Mus. Genov. (2) xii, n. spp.
- Luperodes braeti*, Bengal, DUVIVIER, p. 437, Ann. Ent. Belg. xxxvi ; *L.*  
*impressipennis*, p. 950, *subrugosus*, *tarsalis*, p. 951, *pygidialis*, p. 952,  
 Burma, JACOBY, Ann. Mus. Genov. (2) xii ; *L. salcini*, Guatemala,  
 JACOBY, p. 336, Biol. Centr. Am. Col. vi (1 supp.) : n. spp.
- Luperomorpha vittata*, p. 427, *nigripennis*, *albofasciata*, p. 428, Bengal,  
 DUVIVIER, Ann. Ent. Belg. xxxvi : n. spp.
- Luperus tenuelimbatus*, Obock, FAIRMAIRE, p. 126, Rev. d'Ent. xi ; *L.*  
*constricticollis*, Burma, JACOBY, p. 949, Ann. Mus. Genov. (2) xii :  
 n. spp.
- Mucetes peringueyi*, S. Africa, LEFÈVRE, p. 41, Tr. S. African Phil.  
 Soc. vi, n. sp.
- Macrima abdominalis*, varietal note ; JACOBY, p. 88, Ent. xxv (Supp.).
- Malacorhinus cobanensis*, pl. xliii, fig. 18, *exclamationis*, fig. 19, Central  
 America, JACOBY, p. 336, Biol. Centr. Am. Col. vi (1 supp.), n. spp.
- Malacosoma sikoræ*, *aterrimum*, p. 575, *flavicornæ*, p. 576, pl. xxxix, fig. 12,  
 Madagascar, JACOBY, P. Z. S. 1892 ; *M. nigricolle*, Burma, JACOBY,  
 Ann. Mus. Genov. (2) xii : n. spp.
- Malazia pallipes*, Burma, JACOBY, p. 969, Ann. Mus. Genov. (2) xii,  
 n. sp.
- Mandarella*, n. g., *Agelastocites*, p. 433, for *M. nagpurensis*, n. sp., Bengal,  
 p. 434 ; DUVIVIER, Ann. Ent. Belg. xxxvi.
- Mastotethus angustovittatus*, Mexico, JACOBY, p. 343, Biol. Centr. Am. Col.  
 vi (1 supp.), n. sp.
- Megalognatha bohemanii*, = (*Cneorane foveicollis*, Jac.), *M. elegans*, =  
 (*Apophyllia elegantula*, Jac.) ; JACOBY, Ent. xxv, p. 162.
- Megalopus basalis*, Mexico, JACOBY, p. 344, Biol. Centr. Am. Col. vi  
 (1 supp.), n. sp.
- Megalostomis* : characters of, N. American ; HORN, p. 11, Tr. Am. Ent.  
 Soc. xix.

- Megamerus mandibularis*, N. W. Australia, BLACKBURN, p. 67, Tr. B. S. Austr. xv, n. sp.
- Melasoma populi*, n. var., *janaceki*; REITTER, p. 240, Wien. ent. Z. x
- Melitonoma decorata*, S. W. Africa, PÉRINGLEY, p. 84, Tr. S. Af Phil. Soc. vi (2), n. sp.
- Menippus aeneipennis*, Celebes, WEISE, p. 404, Deutsche e. Z. 1892, n.
- Menius distanti*, Transvaal, JACOBY in Distant, Naturalist Trans. p. 205, pl. i, fig. 6, n. sp.
- Meristu cardoni*, E. India, DUVIVIER, p. 440, Ann. Ent. Belg. x n. sp.
- Meoderus brevicollis*, Mexico, JACOBY, p. 347, Biol. Centr. Am. C (1 supp.), n. sp.
- Metachroma aeneicollis*, p. 211, *longulum*, p. 212, *aterrimum*, p. 214, *male*, p. 215, *parallelum*, p. 217, N. America, HORN, Tr. Am. Ent. xix, n. spp.
- Metacoryna laevipennis*, Guatemala, *pretiosa*, Mexico, pl. xliii, fig. JACOBY, p. 338, Biol. Centr. Am. Col. vi (1 supp.), n. sp.
- Metacrycla rugipennis*, Mexico, JACOBY, p. 337, Biol. Centr. Am. C (1 supp.), n. sp.
- Metasryonycha circumcincta*, N. America, HORN, p. 228, Tr. Am. Ent. xvi, n. sp.
- Mimastra longicornis*, p. 944, *hirsuta*, p. 945, Burma, JACOBY, Ann. Genov. (2) xii, n. spp.
- Mimastroides*, n. g., *Galerucinae*, p. 577, for *M. madagascariensis*, : Madagascar, pl. xxxix, fig. 11, p. 578; JACOBY, P. Z. S. 1892.
- Monoleptus marginata*, p. 981, *birmanensis*, p. 982, *alboplagiata*, p. 983, *fae*, p. 984, Burma, JACOBY, Ann. Mus. Genov. (2) *M. benalla*, *froggatti*, Victoria, BLACKBURN, p. 549, P. Linn. N.S.W. (2) vi; *M. morosa*, Mexico, JACOBY, p. 340, Biol. Centr. Col. vi (1 supp.) : n. spp.
- Monoplatus puncticollis*, Mexico, JACOBY, p. 320, Biol. Centr. Am. vi (1 supp.), n. sp.
- Mouhotina birmanica*, Burma, JACOBY, p. 913, Ann. Mus. Genov. (2) n. sp.
- Neobrotia pallida*, *ruatanæ*, pl. xliii, fig. 17, Mexico, JACOBY, p. 335, Biol. Centr. Am. Col. vi (1 supp.), n. spp.
- Neolepta ruficollis*, Burma, JACOBY, p. 992, Ann. Mus. Genov. (2) n. sp.
- Nestinus longicornis*, Mexico, JACOBY, p. 324, Biol. Centr. Am. C (1 supp.), n. sp.
- Nirina*, n. g., near *Puchytoma*, for *N. jacobyi*, n. sp., E. Africa; v p. 403, Deutsche e. Z. 1892.
- Nisotra nigratarsis*, *klugii*, Madagascar, JACOBY, p. 572, P. Z. S. *N. papuensis*, New Guinea, TRYON (953) : n. spp.
- Nodina tarsalis*, Bengal, DUVIVIER, p. 409, Ann. Ent. Belg. xxxvi; 2 *cula*, p. 902, *robusta*, p. 903, *birmanica*, p. 904, Burma, JACOBY Ann. Mus. Genov. (2) xii : n. spp.

- Nodonota clypealis*, N. America, HORN, p. 232, Tr. Am. Ent. Soc. xix, n. sp.
- Nodostoma variabile*, p. 406, *angulicolle*, p. 408, Bengal, DUVIVIER, Ann. Ent. Belg. xxxvi; *N. bellum*, p. 895, *bhamoense*, p. 896, *semicaruleum*, *fea*, p. 897, *birmanicum*, p. 898, *capitatum*, *bimaculicolle*, p. 899, *denticolle*, p. 900, *violaceofasciatum*, p. 901, *semipurpureum*, p. 902, Burma, JACOBY, Ann. Mus. Genov. (2) xii; *N. indicum*, Burma, *multicostata*, p. 86, *apicipes*, p. 87, Sumatra, JACOBY, Ent. xxv (Supp.): n. spp.
- Nonarthra variabilis*, varr. described; DUVIVIER, p. 423, Ann. Ent. Belg. xxxvi.
- N. albofasciata*, DUVIVIER, p. 424, Ann. Ent. Belg. xxxvi, n. sp.
- Ochralea rufobasalis*, p. 977, *pallida*, p. 978, Burma, JACOBY, Ann. Mus. Genov. (2) xii, n. spp.
- Odontionopa discolor*, Cape Town, LEFÈVRE, p. 39, Tr. S. African Phil. Soc. vi, n. sp.
- Edionychis clypeata*, Madagascar, JACOBY, p. 574, P. Z. S. 1892; *Æ. clypeata*, p. 317, *haroldi*, *durangoensis*, p. 318, *pavonina*, p. 319, pl. xliii, fig. 1, Mexico, JACOBY, Biol. Centr. Am. Col. vi (1 supp.): n. spp.
- Oides basalis*, *flavolimbatus*, New Guinea, TRYON (1953), n. spp.
- Omotyphus suturalis*, pl. xliii, fig. 3, p. 322, *carinatus*, fig. 4, p. 323, Mexico, JACOBY, Biol. Centr. Am. Col. vi (1 supp.), n. spp.
- Ootheca modesta*, Transvaal, GAHAN in Distant, Naturalist Transvaal, p. 206, pl. i, fig. 11, n. sp.
- Ophraea opaca*, Mexico, JACOBY, p. 327, Biol. Centr. Am. Col. vi (1 supp.), n. sp.
- Orsodacna atra*, variation and synonyms; HORN, p. 6, Tr. Am. Ent. Soc. xix: variation, HAMILTON, p. 160, Canad. Ent. xxiv.
- Orthaulaca*, n. g. (with 5 subgg.), type, *Galeruca similis*, Ol.; WEISE, p. 393, Deutsche e. Z. 1892.
- Oxycephala longipennis*, New Guinea, GESTRO, p. 1017, Ann. Mus. Genov. (2) x, n. sp.
- Pachnephoptrus*, n. g., near *Pachnephorus*, for *P. weisei*, n. sp., Ordubad; REITTER, p. 153, Wien. ent. Z. xi.
- Pachnephorus plagiatus*, Burma, JACOBY, p. 913, Ann. Mus. Genov. (2) xii, n. sp.
- Pachybrachys nigropunctatus*, *glycyrrhizæ*, distinctive characters; WEISE, p. 413, Deutsche e. Z. 1892. *P. lecontei*, n. n. for *brevicollis*, Jac., nec Lec.; JACOBY, p. 348, Biol. Centr. Am. Col. vi (1 supp.).
- Pachygnatha*, n. g., for *Orina dolens*, Kr.; WEISE, p. 352, Deutsche e. Z. 1892.
- Pachypalpa*, n. g., for *Galeruca luteicornis*, Fab.; WEISE, p. 392, Deutsche e. Z. 1892.
- Pachytoma dives*, Karsch, = (*Mesodonta submetallica*, Jac.); JACOBY, Ent. xxv, p. 162.
- P. obscura*, Centr. Africa, GAHAN, p. 93, P. Z. S. 1892, n. sp.
- Pallemis chapuisi*, Cape Town, LEFÈVRE, p. 41, Tr. S. African Phil. Soc. vi, n. sp.



- Peridryas*, n. g., *Arripodites*, p. 439, for *P. apicipennis*, n. sp., Bengal, p. 421. DUVIVIER, ANN. ENT. BELG. XXXVI.
- Peris* merged in *Typophorus*: HORS., p. 207. Tr. Am. Ent. Soc. xix.
- Perides approximata*, p. 439, *Evrida*, p. 432, DUVIVIER, ANN. ENT. BELG. XXXVI; *P. bifurcata*, *ruficollis*, p. 953, *cornuta*, p. 954, *nigripennis*, p. 955, *furcipennis*, p. 956, *unifasciata*, p. 957, BURMA, JACOBY, ANN. MUS. GENOV. (2) XII: n. spp.
- Peripides pardalis*, *nigropunctatus*, BURMA, JACOBY, p. 918, ANN. MUS. GENOV. (2) XII, n. spp.
- Peripus galvaranensis*, p. 545, *latipes*, p. 546, *regularis*, p. 547, AUSTRALIA, BLACKBURN, P. LINN. SOC. N.S.W. (2) VI; *P. rufopicta*, W. AUSTRALIA, BLACKBURN, p. 237. Tr. R. Soc. S. Austr. XV: n. spp.
- Pezomus strigicollis*, Cape Colony, LEFÈVRE, p. 41, Tr. S. African Phil. Soc. VI, n. sp.
- Phelidicus brevicornis*, p. 567, pl. XXXIX, fig. 2. *P. ? anicollis*, fig. 4, *bifasciatus*, fig. 3, p. 562, MADAGASCAR, JACOBY, P. Z. S. 1892, n. spp.
- Phyllotreta dentifera*, S. FRANCE, GUILLEBEAU, ÉCHANGE, I, No. 7; *P. chatenica*, Bengal, DUVIVIER, p. 426, ANN. ENT. BELG. XXXVI: n. spp.
- Phymatrus elongatulus*, p. 321, *flavopileus*, p. 322, MEXICO, JACOBY, BIOL. CENTR. AM. COL. VI (1 suppl.), n. spp.
- Phytodorta lineatus*, Schrank, synonymical note; WEISE, p. 414, Deutsche e. Z. 1892.
- Piazus*, n. g., near *Lactica*, for *P. fulvus*, n. sp., Mexico, pl. XLIII, fig. 25; JACOBY, p. 345, BIOL. CENTR. AM. COL. VI (1 suppl.).
- Pilemostoma*, n. subg. of *Cassida*: DESBROCHERS, p. 14, Supp., Frelon, I.
- Platypria acanthion*, p. 245, *ericulus*, p. 247, BURMA, GESTRO, ANN. MUS. GENOV. (2) X, n. spp.
- Platycautha africana*, Congo, DUVIVIER, p. 167, ANN. ENT. BELG. XXXVI; *P. indica*, Bengal, DUVIVIER, p. 445, ANN. ENT. BELG. XXXVI: n. spp.
- Plectrocelis oliffi*, N. S. WALES, BLACKBURN, p. 548, P. LINN. SOC. N.S.W. (2) VI, n. sp.
- Podagrica decolorata*, Congo, DUVIVIER, p. 60, ANN. ENT. BELG. XXXVI, n. sp.
- Pacilomorpha binolata*, S. W. AFRICA, PÉRINGLEY, Tr. S. African Phil. Soc. VI (2), p. 83, n. sp.
- Prionispa pulchra*, BORNEO, GORHAM, p. 84, pl. IV, fig. 2, P. Z. S. 1892, n. sp.
- Pseudocassida*, n. subg. of *Cassida*, DESBROCHERS, p. 15 (Supp.) Frelon, I.
- Pseudocolaspis hottentota*, *variegata*, *brachiata*, p. 39, *gracilipes*, *viridana*, p. 40, S. AFRICA, LEFÈVRE, Tr. S. African Phil. Soc. VI; *P. bengalensis*, India, DUVIVIER, p. 412, ANN. ENT. BELG. XXXVI: n. spp.
- Pseudocrania*, n. g., near *Monolepta*, for *P. latifrons*, n. sp., QUANGO; WEISE, p. 400, Deutsche e. Z. 1892.
- Pseudodiabrotica*, n. g., near *Microbrotica*, for *P. metallica*, n. sp., Mexico, pl. XLIII, fig. 16; JACOBY, p. 334, BIOL. CENTR. AM. COL. VI (1 suppl.).

- Pseudoides*, n. g., *Agelastina*, for *P. bivittata*, n. sp., Burma; JACOBY, p. 966, Ann. Mus. Genov. (2) xii.
- Pseudopiomera*, n. g., *Leprochina*, p. 907, for *P. pallidicornis*, n. sp., Burma, p. 908; JACOBY, Ann. Mus. Genov. (2) xii.
- Pteleon pubescens*, Mexico, JACOBY, p. 337, Biol. Centr. Am. Col. vi (1 supp.), n. sp.
- Rhaphidopalpa bengalensis*, Calcutta, *aruensis*, N. Guinea, *ceramensis*, Borneo, &c., *niasensis*, Sumatra, p. 394, *chinensis*, Shanghai, p. 395, WEISE, Deutsche e. Z. 1892, n. spp.
- Rhembastus dimidiaticornis*, p. 569, *antennatus*, p. 570, Madagascar, JACOBY, P. Z. S. 1892, n. spp.
- Rhinometus modestus*, p. 320, *minutus*, p. 321, Mexico, JACOBY, Biol. Centr. Am. Col. vi (1 supp.), n. spp.
- Rhyparida striaticollis*, Madagascar, JACOBY, p. 571, pl. xxxix, fig. 7, P. Z. S. 1892; *R. aterrima*, Burma, JACOBY, p. 911, Ann. Mus. Genov. (2) xii; *R. mastersi*, Queensland, BLACKBURN, p. 236, Tr. R. Soc. S. Austr. xv : n. spp.
- Rupilia rugulosa*, Queensland, BLACKBURN, p. 238, Tr. R. Soc. S. Austr. xv, n. spp.
- Rybakowia*, n. g., near *Haltica*, p. 465, for *R. pyriformis*, = (*globicollis*, Ryb.), n. sp., Amdo, p. 466; JACOBSON, Hor. Ent. Ross. xxvi.
- Sastra fulvicornis*, Burma, JACOBY, p. 958, Ann. Mus. Genov. (2) xii, n. sp.
- Sastroides crassipalpis*, referred to *Sastra*; JACOBY, p. 958, Ann. Mus. Genov. (2) xii.
- S. parvula*, Burma, JACOBY, p. 959, Ann. Mus. Genov. (2) xii, n. sp.
- Sazinis politula*, *speculifera*, California, HORN, p. 10, Tr. Am. Ent. Soc. xix, n. spp.
- Scelidopsis* (?) *violacea*, Mexico, JACOBY, p. 339, Biol. Centr. Am. Col. vi, (1 supp.), n. sp.
- Sebaethe quadrimaculata*, *elongata*, p. 922, *immaculata*, p. 923, *S. P. recticollis*, p. 924, Burma, JACOBY, Ann. Mus. Genov. (2) xii, n. spp.
- Sermyleoides dilaticornis*, Sumatra, JACOBY, p. 88, Ent. xxv (Supp.), n. sp.
- Solenia abdominalis*, p. 986, *integricollis*, p. 987, Burma, JACOBY, Ann. Mus. Genov. (2) xii, n. spp.
- Sphenoraia imitans*, Burma, JACOBY, p. 961, Ann. Mus. Genov. (2) xii, n. sp.
- Sphærarthra*, subg. (n. ?) of *Orthaulaca*; WEISE, p. 396, Deutsche e. Z. 1892.
- Sphæroderma antennata*, p. 925, *nigrita*, p. 926, *birmanica*, *acutangula*, p. 927, *varipennis*, p. 928, *discicollis*, *terminata*, p. 929, *pallidicornis*, p. 930, Burma, JACOBY, Ann. Mus. Genov. (2) xii, n. spp.
- Sphærometopa intermedia*, Burma, JACOBY, p. 925, Ann. Mus. Genov. (2) xii, n. sp.
- Spilcephalus viridipennis*, var. described and figured; GAHAN in Distant, Naturalist Transvaal, p. 207, pl. i, fig. 12.
- S. distantis*, Transvaal, GAHAN in Distant, Naturalist Transvaal, p. 208, n. sp.

- Spilopyra olliffi*, N. S. Wales, BLACKBURN, p. 544, P. Linn. Soc. N.S. (2) vi, n. sp.
- Sternoplatys piceus*, Fab., = (*pascoei*, Baly); DUVIVIER, p. 374, Ent. Belg. xxxvi.
- Stethomela caudata*, Queensland, BLACKBURN, p. 237, Tr. R. Soc. S. A. xv, n. sp.
- Syagrus rufo-brunneus*, *rugiceps*, Zambesi, LEFÈVRE, p. 43, Tr. S. Af. Phil. Soc. vi, n. spp.
- Syneta*: characters and synonymy of the N. American species; H. pp. 1-5, Tr. Am. Ent. Soc. xix.
- Temnaspis flavicornis*, p. 875, *nigroplagiata*, p. 876, Burma, JACOBY, Mus. Genov. (2) xii; *T. squalidus*, Indo-China, ALLARD, p. 23 Arch. Mus. Paris (3) iii: n. spp.
- Theopea nigricollis*, Borneo, JACOBY, p. 87, Ent. xxv (Supp.), n. sp.
- Timarcha arragonica*, Spain, BALBI, Riv. Ital. Sci. Nat. xii, p. 50, n.
- Trichostola capensis*, S. Africa, LEFÈVRE, p. 42, Tr. S. African Phil. vi, n. sp.
- Trichotheca basifemorata*, Bengal, DUVIVIER, p. 410, Ann. Ent. xxxvi, n. sp.
- Trirrhada vicina*, p. 324, *kogei*, pl. xliii, fig. 8, *sublavicollis*, fig. 7, p. *semiviridis*, fig. 9, *rugosa*, fig. 10, *guatemalensis*, p. 326, C. America, JACOBY, Biol. Centr. Am. Col. vi (1 supp.), n. spp.
- Tymnes violaceus*, Pennsylvania, HORN, p. 222, Tr. Am. Ent. Soc. n. sp.
- Wallacea inornata*, Engano, GESTRO, p. 792, Ann. Mus. Genov. (2) n. sp.
- Zeugophora*: characters of N. American; HORN, p. 7, Tr. Am. Ent. xix.

## EBOTYLIDÆ.

[Cf. GORHAM (350), REITTER (725), RITSEMA (757).]

- Asmonax*, n. g., near *Encaustes*, for *A. whiteheadi*, n. sp., Borneo, fig. 5; GORHAM, p. 85, P. Z. S. 1892.
- Helota fœx*, p. 886, *serratipennis*, p. 890, *rotundata*, p. 891, *gestroi*, p. 895, *difficilis*, p. 896, *dohertyi*, p. 898, *notata*, p. 901, Burma, RITSEMA, Ann. Mus. Genov. (2) x, n. spp.
- Triplax (Platychna) analis*, Araxes Valley, p. 133, *swanetica*, Cau p. 134, REITTER, Wien. ent. Z. xi, n. spp.

## ENDOMYCHIDÆ.

[Cf. GAHAN (210), GORHAM (350)]

- Amphisternus armatus*, Borneo, GORHAM, p. 86, pl. iv, fig. 3, P. Z. S. n. sp.
- Ancylopus fuscipennis*, Transvaal, GAHAN in Distant, Naturalist T. vaal, p. 210, pl. iv, fig. 10, n. sp..

*Epipocus cinctus*, metamorphoses ; WICKHAM, Bull. Lab. Iowa, ii, p. 198, pl. i.

*Eumorphus costatus*, ♂ described ; GORHAM, p. 87, P. Z. S. 1892.

*E. tumescens*, p. 86, pl. iv, fig. 4, *lucidus*, p. 87, fig. 1, Borneo, GORHAM, P. Z. S. 1892, n. spp.

## COCCINELLIDÆ.

[Cf. BLACKBURN (93, 94), BLAISDELL (97), FRIVALDSZKY (309), GORHAM (347, 348, 351), SICARD (846), WEISE (402, 993, 995, 997, 1001) ]

Habit of congregating of *Coccinellidæ*, discussion ; P. E. Soc. Wash. ii, pp. 169 & 170.

Weise's "Bestimmungs-Tabellen" of European *Coccinellidæ*, translated into French, with notes by SICARD & BEDEL ; SICARD, Abeille, xxviii, pp. 1-80.

*Adonia weisei*, China, FRIVALDSZKY, p. 120, Term. füzetek, xv, n. sp.

*Bucolinus*, n. g., near *Bucolus*, for *B. longicornis*, n. sp., Victoria ; BLACKBURN, p. 252, Tr. R. Soc. S. Austr. xv.

*Bucolus convexus*, New S. Wales, BLACKBURN, p. 72, Tr. R. Soc. S. Austr. xv, n. sp.

*Chilocorides* : characters of the group noticed ; GORHAM, p. 174, Biol. Centr. Am. Col. vii.

*Chilocorus bipustulatus* and *renipustulatus*, destroying *Coccidæ* ; BEDEL, p. 2, Abeille, xxviii.

*C. chalybeatus*, Kiu-Kiang, GORHAM, Ent. xxv (Supp.), p. 84 ; *C. flavidus*, Queensland, BLACKBURN, p. 239, Tr. R. Soc. S. Austr. xv : n. spp.

*Chmootriba antinorii*, Scioa, GORHAM, p. 911, Ann. Mus. Genov. (2) x, n. sp.

*Clanis soror*, Bengal, WEISE, p. 25, Ann. Ent. Belg. xxxvi, n. sp.

*Cleis lynx*, figured, pl. ix, fig. 19 ; GORHAM, Biol. Centr. Am. Col. vii.

*Coccinella 12-maculata*, n. var., *jakolewi* ; WEISE, p. 140, Deutsche s. Z. 1892. *C. septempunctata*, temporary colonies of ; PLATEAU, p. 393, Ann. Ent. Belg. xxxvi.

*Calophora unicolor*, great variation and synonymy ; WEISE, pp. 20-24, Ann. Ent. Belg. xxxvi.

*C. mastersi*, p. 238, *guttata*, p. 239, Queensland, BLACKBURN, Tr. R. Soc. S. Austr. xv, n. spp.

*Cycloneda sallei*, pl. ix, fig. 21, *retrospiciens*, pl. x, fig. 2, figured, *rubida*, variation and synonymy noticed, p. 171, *abdominalis*, varr. figured, pl. ix, figs. 22-24, *gilardini*, figured, pl. ix, fig. 25 ; GORHAM, Biol. Centr. Am. Col. vii.

*C. electra*, Guatemala, GORHAM, p. 173, pl. x, fig. 3, Biol. Centr. Am. Col. vii., n. sp.

*Cycloscymnus*, n. g., *Bucolites*, for *C. minutus*, n. sp., New S. Wales ; BLACKBURN, p. 251, Tr. R. Soc. S. Austr. xv.

*Egleis kingi*, MacL., = (*varicolor*, Muls.) ; BLACKBURN, p. 238, Tr. R. Soc. S. Austr. xv.

- Epilachna sciocensis*, p. 910, *agreta*, p. 911, Scioa, GORHAM, Ann Genov. (2) x; *E. fairmairei*, China, FRIVALDSZKY, p. 121, 1 fűzetek, xv; *E. insignis*, Kiu-Kiang, GORHAM, Ent. xxv (Supp. p. 84 : n. spp.
- Erithionyx*, n. g., for *Rhisobius lanosus*, BLACKBURN, p. 259, Tr. R. & Austr. xv.
- Gymnoscymnus*, n. g., p. 241, for *G. quadrimaculatus*, n. sp., Aust p. 242; BLACKBURN, Tr. R. Soc. S. Austr. xv.
- Halyisia oblongoguttata*, minute structure of elytra; HOFFBAUER (40 *H. emaciata*, pl. ix, figs. 12 & 13, *epistictica*, figs. 14 & 15, p. 164, *c pioni*, pl. x, fig. 1, p. 165, Panama, GORHAM, Biol. Centr. Am. vii, n. spp.
- Harmonia impustulata*, larva and pupa; PLANET, Le Nat. 1892, p. 17
- Hyperaspis salaamensis*, E. Africa, WEISE, Deutsche a. Z. 1892, p. 15,
- Hypocyrema*, n. g., near *Cyrema*, p. 250, for *H. pauxillum*, n. sp., tralia, p. 251; BLACKBURN, Tr. R. Soc. S. Austr. xv.
- Leis azyridis*, n. var., *duodecimsignata*; FRIVALDSZKY, p. 121, 1 fűzetek, xv.
- Liadalia lenticula*, Kiu-Kiang, GORHAM, Ent. xxv (Supp.), p. 82, n.
- Lipernes subviridis*, New S. Wales, BLACKBURN, p. 72, Tr. R. Soc. Austr. xv, n. sp.
- Megilla maculata*, habits; RILEY, P. E. Soc. Wash. ii, p. 168.
- Midus pygmaeus*, Australia, BLACKBURN, p. 261, Tr. R. Soc. S. A xv, n. sp.
- Neda bicolor*, Queensland, BLACKBURN, p. 238, Tr. R. Soc. S. Aust n. sp.
- Neocalvia areolata*, Panama; GORHAM, p. 169, pl. ix, fig. 20, Biol. (Am. Col. vii.
- Neohalyisia perroudi*, figured; GORHAM, pl. ix, fig. 11, Biol. Centr. Col. vii.
- Orcus caeruleus*, figured; GORHAM, pl. x, fig. 4, Biol. Centr. Am. Co
- O. chalybeus*, early stages, *Ins. Life*, v, p. 42.
- O. punctulatus*, *splendens*, p. 240, *ovalis*, *obscurus*, p. 241, Aust BLACKBURN, Tr. R. Soc. S. Austr. xv, n. spp.
- Ortalia discoidea*, E. India, WEISE, p. 27, Ann. Ent. Belg. xxxvi, n.
- Oryssomus*: *Clypeaster variegatus*, Phil., referred to this; GER p. 261, Act. Soc. Chili, ii.
- Platynaspis*, = (*Microrrhymbus*, Gerst.); WEISE, p. 413, Deutsche 1892. *P. abdominalis*, n. n. for *rufipennis*, Weise; WEISE, l.c.
- Psyllobora confusus*, fig. 18, *luctuosa*, fig. 16, *rosi*, fig. 17, figured, noticed, pp. 165, 168; GORHAM, Biol. Centr. Am. Col. vii.
- Ptychanatis azyridis*, variation; GORHAM, Ent. xxv (Supp.), p. 82.
- Rhisobius fugax*, *dorsalis*, p. 70, *coccus*, *lanosus*, *pukher*, p. 71, Aus BLACKBURN, Tr. R. Soc. S. Austr. xv; *R. nigronotatus*, *ornatig* p. 253, *speculifer*, *toowoomba*, p. 254, *satelles*, *aurantii*, *p. fasciculatus*, *apicalis caeruleus*, p. 256, *plebeius*, p. 257, Aus BLACKBURN, t. c. : n. spp.

- Rodolia* : characters of ; WEISE, p. 25, Ann. Ent. Belg. xxxvi.  
*R. breviscula*, E. India, *pumila*, Hong-Kong, WEISE, p. 26, Ann. Ent. Belg., n. spp.  
*Scymnodes*, New S. Wales, BLACKBURN, Tr. R. Soc. S. Austr. xv, p. 69, n. sp.  
*Scymnomorpha*, n. g., near *Pullus*, for *S. duplopunctulata*, n. sp., Victoria; BLACKBURN, Tr. R. Soc. S. Austr. xv.  
*Scymnus koebeli*, variation ; BLACKBURN, p. 242, Tr. R. Soc. S. Austr. xv.  
*S. (Nephus) jakolewi*, Irkutsk, WEISE, p. 141, Deutsche e. Z. 1892 ; *S. (Nephus) severini*, p. 27, *S. (Pullus) dorsualis*, p. 28, E. India, WEISE, p. 28, Ann. Ent. Belg. xxxvi ; *S. sydneyensis, australasia*, p. 243, *jocosus, cucullifer*, p. 244, *victoriensis, subelongatulus*, p. 245, *sublatus, pretiosus, inaffectatus*, p. 246, *whittonensis*, *S. (n. g. ?) queenslandicus*, p. 247, *S. vagans*, p. 248, Australia, BLACKBURN, Tr. R. Soc. S. Austr. xv : n. spp.  
*S. lophanthæ*, California, BLAISDELL, Ent. News, iii, p. 51.  
*Semichnoodes*, n. g., near *Bucolus*, p. 15, for *S. kunowi*, n. sp., E. Africa, p. 16 ; WEISE, Deutsche e. Z. 1892.  
*Semiadalia heydeni*, Margelan, WEISE, p. 110, Deutsche e. Z. 1892, n. sp.  
*Serangium maculigerum*, Queensland, *hirtuosum*, New S. Wales, BLACKBURN, p. 73, Tr. R. Soc. S. Austr. xv, n. spp.  
*Sumnius*, n. g., near *Rhizobius* for *S. renardi*, p. 29, *cardoni*, p. 30, n. spp., E. India ; WEISE, Ann. Ent. Belg. xxxvi.  
*Trichorcus*, n. g., near *Orcus*, for *T. cinctus*, n. sp., New S. Wales, BLACKBURN, Tr. R. Soc. S. Austr. xv, p. 73.  
*Verania cardoni*, E. India, WEISE, p. 19, Ann. Ent. Belg. xxxvi, n. sp.

## CORYLOPHIDÆ.

- Clypeaster variegatus*, Phil., referred to *Oryssomus* in *Coccinellidæ* ; GERMAIN, p. 261, Act. Soc. Chili, ii.

## (B.) HYMENOPT.

- Structure of ovipositor ; MARLATT (581).  
 Retardation of appearance of *Hymenoptera*  
 summit of Mont Ventoux ; NICOLAS, I  
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 FREY-GESSNER, Bull. Soc. Murith. xiii, pp

## ACULEATA.

- [Cf. ANDRÉ (12, 13), BENTON (54), BENZI (55),  
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 (197), EMERY (249-254), FOREL (287-2  
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## APIDÆ.

- Mode of secretion of wax ; MAYER, MT. x. 8  
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 Revision of the bees described in Gray's Chili ;  
*Amdrena mandibularis*, Illinois, ROBERTSON, p.

- Anthidium manicatum*, habits ; VERHOEFF, Zool. Jahrb. Syst. vi, p. 710.
- A. buyssoni* (Perez), Caracas, BUYSSON, p. 55, Ann. Soc. Ent. Fr. lxi, n. sp.
- Anthop'ora parietina*, *personata*, *pilipes*, nests and habits, VERHOEFF, Zool. Jahrb. Syst. vi, pp. 699-703 ; *A. pilipes*, habits of ♂, VERHOEFF, Ent. Nachr. xviii, p. 244.
- A. locsyi*, Tibet, MOCSÁRY, p. 130, Term. füzetek, xv, n. sp.
- Apis mellifica* : workers feeding drones ; COOK, Bull. Dep. Agric. Ent. xxvi, p. 89. Koschewnikoff on male organs, translated in Ann. N. H. (6) ix, p. 185. Distance it flies, BENTON, Ins. Life, iv, p. 319.
- Bombus*, the species of the Valais, with note on economy ; FREY-GESSNER, Bull. Soc. Murith. xiii, pp. 32-36.
- B. silantjewi*, p. 132, *suworzewi*, p. 135, Russia ; MORAWITZ, Hor. Ent. Ross. xxvi, n. spp.
- Calliopsis parvus*, Illinois, ROBERTSON, p. 273, Am. Nat. xxvi, n. sp.
- Camptopœum altaicum*, Russia, MORAWITZ, p. 142, Hor. Ent. Ross. xxvi, n. sp.
- Ceratina cœrulea*, habits ; VERHOEFF, Zool. Jahrb. Syst. vi, p. 736.
- C. nitidula*, Transcaspien region, MORAWITZ, p. 141, Hor. Ent. Ross. xxvi, n. sp.
- Chalicodoma muraria*, parasites ; CARPENTIER, Bull. Soc. L. Nord France, x, p. 328.
- Chelostoma florissomme*, habits ; ALFKEN, p. 209, Ent. Nachr. xviii.
- Colioxys dentigera*, China, MOCSÁRY, p. 131, Term. füzetek, xv, n. sp.
- Colletes* and *Prosopis* to form one family called *Colletidæ* ; VERHOEFF, p. 734, Zool. Jahrb. Syst. vi.
- Epeolus productus* and *rufipes*, distinctions of ♂ ; SAUNDERS, Ent. M. M. xxviii, p. 161. *E. pusillus*, ♂ described ; FOX, Ent. News, iii, p. 29.
- Ecomalopsis neglectus*, Caracas, BUYSSON, p. 55, Ann. Soc. Ent. Fr. lxi, n. sp.
- Halictus cylindricus*, hermaphrodite ; KRIEGER, pp. 137-140, Z. Naturw. lrv. *H. sexcinctus*, habits ; VERHOEFF, pp. 711-717, Zool. Jahrb. Syst. vi.
- H. sphecodimorphus*, Spain, Oran, *angustifrons*, Algeria, VACHAL, p. xxii, Bull. Soc. Ent. Fr. lxi ; *H. denticollis*, E. Siberia, p. 145, *dmitrijewi*, p. 146, Russia, *monstrificus*, E. Siberia, p. 147, JAKOWLEW, Hor. Ent. Ross. xxvi ; *H. luridipes*, *gibber*, p. cxxxvi, *magretti*, p. cxxxvii, Soudan, VACHAL, Bull. Soc. Ent. Fr. lxi ; *H. reticulatus*, Florida, *hartii*, Illinois, p. 268, *floridanus*, Florida, *pruinosus*, p. 269, *cephalicus*, *obscurus*, p. 270, Illinois, *ashmeadii*, Florida, *illinoensis*, p. 271, *anomalus*, Illinois, *apopkensis*, *longiceps*, Florida, p. 272, ROBERTSON, Am. Nat. xxvi ; *H. clavatus*, Venezuela, BUYSSON, p. 55, Ann. Soc. Ent. Fr. lxi : n. spp.
- Heriades copetica*, Transcaspien Region, MORAWITZ, p. 149, Hor. Ent. Ross. xxvi, n. sp.
- Megachile* : nests of N. American species noticed ; PACKARD, Psyche, vi, p. 340. *M. dufourii*, nest ; ANDRÉ, Échange, i, No. 7, p. 1.



- M. rhinoceros*, China, MOCÁRY, p. 131, Term. füzetek, xv, n. sp.
- Melissodes palustris*, Illinois, ROBERTSON, p. 273, Am. Nat. xxvi, n. sp.
- Meliturga pictipes*, *spinosa*, Russia, MORAWITZ, Hor. Ent. Ross. n. spp.
- Nomada baldiniana*, Italy, BENZI, Atti Soc. Mod. (3) xi, p. 220, n. sp.
- Osmia emarginata*, habits, architecture; VERHOEFF, Zool. Jahrb. Syst. p. 703. *A. leucomelasma*, habits; VERHOEFF, t. c. p. 736: account the mode in which its larva is devoured by *Stelis minuta*; VERHOEFF, p. 41, Zool. Anz. xv. *O. tridentata*, nidification and habits; VERHOEFF, Ent. Nachr. xviii, pp. 225-227. *O. similina*, *pacifica*, noticed; PACKARD, Psyche, vi, p. 340.
- O. (Acanthosmia) gräfei*, Trieste, SCHMIEDEKNECHT, p. 137, Atti Trieste, viii; *O. friesei*, Dalmatia, VERHOEFF, p. 289, Ent. Nachr. xviii; *O. globicola*, Cape Good Hope, STADELMANN, p. 235, fig. 3, Berl. Ent. Zeit. xxxvii: n. spp.
- Panurginus hersi*, E. Siberia, MORAWITZ, p. 144, Hor. Ent. Ross. n. sp.
- Proscopia annulatus*, habits of ♂; VERHOEFF, p. 247, Ent. Nachr.: *P. brevicornis*, habits discussed; VERHOEFF, p. 732, Zool. J. Syst. vi.
- P. magretti*, Soudan, VACHAL, p. cxxv, Bull. Soc. Ent. Fr. lxi, n. sp.
- Rhopites mandibularis*, p. 138, *dispar*, p. 139, Russia, MORAWITZ, Ent. Ross. xxvi, n. spp.
- Sphecodes*: *Sabulicola* is a subg. *S. cirsi*, characters; VERHOEFF, Berl. Ent. Zeit. xxxvii.
- Stelis cognata*, Araxes Valley, KOHL, p. 230, Ann. Hofmuseum Wien, n. sp.
- Tetralomia pygialis*, Venezuela, BUYSSON, p. 54, Ann. Soc. Ent. Fr. lxi, n. sp.
- Trigona apiformis*, *ochrotrichus*, Venezuela, BUYSSON, p. 54, Ann. Soc. Ent. Fr. lxi, n. spp.
- Xylocopa virginica*, hibernation of ♂, egg noticed; HOWARD, p. 11, P. E. Soc. Wash. ii.
- X. gribodoi*, Somaliland, MAGRETTI, p. 959, Ann. Mus. Genov. lxi, n. sp.

## VESPIDÆ (DIPLOPTERA).

- Eumenes fraterna*, habits; SOUTHWICK, Ins. Life, v, p. 107.
- E. kohli*, Nomsibé, BRANČIK, p. 159, Jahresh. Ver. Trencsin. xiii, n. sp.
- Hoplopus spinipes*, habits; VERHOEFF, p. 710, Zool. Jahrb. Syst. p. 739. *H. levipes*, habits; *id.* t. c. p. 739.
- Odynerus murarius*, habits; ALFKEN, p. 210, Ent. Nachr. xviii: morphoses; KING, Sci. Goss. 1892, pp. 196-198, woodcuts *spinipes*, metamorphoses and parasites; CARPENTIER, Bull. S. Nord. France, x, p. 326.
- O. pauli*, Cadix, MEDINA, p. 142, Act. Soc. Esp. xxi; *O. aldrice*, America, FOX, p. 197, Ent. News, iii: n. spp.

- Polistes gallicus*, color differences in sexes ; MEDINA, Act. Soc. Esp. xxi, p. 177.
- P. puncticollis*, E. Siberia, MORAWITZ, p. 150, Hor. Ent. Ross. xxvi, n. sp.
- Pterocheilus hispanicus*, Ciudad-Real, MEDINA, p. 144, Act. Soc. Esp. xxi ;
- P. bezzii*, Pavia, COBELLI, p. 67, Verh. z.-b. Wien, xlii : n. spp.
- Zethus slosonæ*, Florida, FOX, p. 29, Ent. News, iii, n. sp.

### HYMENOPTERA FOSSORIA. (SPHEGIDÆ, CRABRONIDÆ, MUTILLIDÆ, ETC.)

- Systematic arrangement and classification of the *Heterogyna*, consisting of *Scoliens*, *Thynniens*, *Bradynobaeniens*, *Mutilliens*, *Fedtschenkiens*, *Sapygiens* ; SAUSSURE in Grandidier, Madagascar Hym. Ac. xx, pt. 1, pp. 176, &c.
- Many of the species described by SAUSSURE last year in MT. Schw. ent. Ges. viii, are now figured and described more fully in GRANDIDIER, Madagascar, xx, pt. 1.
- General observations on the dwellers in *Rubus* stems ; VERHOEFF, Zool. Jahrb. Syst. vi, pp. 746-751.
- Agencia teniata*, p. 347, pl. xxiv, fig. 8, *melæna*, p. 348, pl. xxv, fig. 11, *nitidula*, p. 349, pl. xxii, fig. 10, Madagascar, SAUSSURE in Grandidier, Madagascar, xx, pt. 1, n. spp.
- Ammophila affinis*, account of its instinct and mode of stinging ; MARCHAL, Arch. Z. expér. (2), pp. 23-36. *A. yarrowi*, habits ; WILLISTON, Ent. News, iii, p. 85. *A. gryphus*, habits ; PERGANDE, P. E. Soc. Wash. ii, p. 256.
- A. imerinæ*, Madagascar, SAUSSURE, p. 435, Grandidier, Madagascar, xx, pt. 1, n. sp.
- Ampulex nigrocarulea*, Transvaal, SAUSSURE, p. 212, pl. iv, fig. 6, in Distant, Naturalist Transvaal, n. sp.
- Aporus compressus*, p. 309, pl. xxiv, fig. 1, *prismaticus*, p. 311, fig. 2, Madagascar, SAUSSURE in Grandidier Madagascar, xx, pt. 1, n. spp.
- Astutus* : synopsis of the N. American species ; FOX, p. 232, Canad. Ent. xxiv.
- A. pygidialis*, N. America, FOX, Canad. Ent. p. 234 ; *A. glaber*, Rio grande do Sul, KOHL, p. 230, Ann. Hofmuseum Wien, vii ; *A. blandus*, Madagascar, SAUSSURE, p. 519, pl. xxvii, fig. 4, Grandidier, Madagascar, xx, pt. 1 : n. spp.
- Bembex fischeroides*, Somaliland, MAGRETTI, p. 958, Ann. Mus. Genov. (2) x ; *B. hova*, Madagascar, SAUSSURE, p. 457, Grandidier, Madagascar, xx, pt. 1 : n. spp.
- Bothynostethus*, *Pisonitus*, *Silaon*, are one ; PATTON, p. 90, Ent. News, iii.
- Bradynobaenus*, to form a distinct group ; SAUSSURE, p. 250, Grandidier, Madagascar, xx, pt. 1.
- Callosila*, n. subg. of *Cosila*, p. 232, with *C. flavicornis*, *minuta*, *inornata*, n. spp., S. Australia, p. 233, SAUSSURE in Grandidier, Madagascar, xx, pt. 1.

- Cerceris sibirica*, E. Siberia, MORAWITZ, p. 159, Hor. Ent. Ross. xx.  
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- Ceropales* : revision of the N. American species ; FOX, Tr. Am. Ent. Soc. xix, pp. 49-63.
- C. stretchii*, p. 52, *cressoni*, p. 58, N. America, FOX, Tr. Am. Ent. Soc. xix, n. spp.
- Cheerieria unicolor*, habits ; VERHOEFF, Zool. Jahrb. Syst. vi, p. 730.
- Chlorampulex*, n. g., p. 443, near *Ampulex*, for *A. sibirica* and *compre* Fab., with *C. striolata*, n. sp., Zanzibar, p. 446, SAUSSURE in Grandidier, Madagascar, xx, pt. 1.
- Chlorion forficula*, Madagascar, p. 422, SAUSSURE in Grandidier, Madagascar, xx, pt. 1, n. sp.
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- Crabro capitosus* and spp. in *Sambucus* twigs, habits noticed ; VERHOEFF, Zool. Jahrb. Syst. vi, pp. 717-724.
- C. (Clytochrysus) longipalpis*, Heidelberg, VERHOEFF, p. 70, Ent. Nachr. xviii ; *C. femoralis*, p. 161, *biguttatus*, p. 163, E. Siberia, *jaroschewi*, p. 164, *altaicus*, p. 165, Russia, *jukolewi*, E. Siberia, p. 170, *flavica*, Transcaspien, p. 172, *ruthenicus*, p. 174, *flagellarius*, p. 175, *Rumortjanowi*, E. Siberia, p. 178, MORAWITZ, Hor. Ent. Ross. xxvi.  
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- Ophion wustneii*, Sonderburg, p. 232, *slaviceki*, Moravia, p. 233, KRIECHBAUMER, Ent. Nachr. xviii, n. spp.



- Orthocentrus palpalis*, Prussia, BRISCHKE, Schr. Ges. Danz. (n.s.) v p. 43, n. sp.
- Perilisus* (*Rhastes*) *testaceipes*, Prussia, BRISCHKE, p. 19, Schr. G. Danz. (n.s.) viii; *P. nigropunctatus*, Prussia, BRISCHKE, p. 37, Schr. Ges. Danz. (n.s.) viii : n. spp.
- Perosis albopicta*, p. 214, *gracilis*, p. 216, Germany, KRIECHBAUMER, E. Nachr. xviii, n. spp.
- Pezomachus micaria*, Massachusetts, HOWARD, p. 294, P. E. Soc. Wash. ii, n. sp.
- Phastus* ? *sericeus*, Prussia, BRISCHKE, p. 39, Schr. Ges. Danz. (n.s.) v n. sp.
- Phygadeuon cretatus*, p. 363, *diaphanus*, p. 364, notes on; KRIECHBAUMER, Ent. Nachr. xviii.
- P. (Ischnocryptus) geniculatus*, p. 343, *forticornis*, *clotho*, p. 344, *lach* p. 345, *atropos*, p. 346, Bavaria, KRIECHBAUMER, Ent. Nachr. xviii; *P. caracacensis*, Venezuela, MARSHALL, Ann. Soc. Ent. Fr. p. 62 : n. spp.
- Pimpla instigator*, bred from *Trichiosoma*; BRISCHKE, p. 57, Schr. Ges. Danz. (n.s.) viii.
- P. ellopia*, Brit. Columbia, HARRINGTON, p. 99, Canad. Ent. Soc. Trans. xiv; *argiopes*, p. 65, *simonis*, p. 67, Caracas, MARSHALL, Ann. Soc. Ent. Fr. lxi : n. spp.
- Platylabus uranius*, ♂ described; THOMSON, p. 1773, Opusc. xvi.
- Plesiophthalmus paniscoides*, Massachusetts, ASHMEAD, p. 107, Ent. N. Am. iii, n. sp.
- Polyblastus* (*Scopiorus*) *lucidus*, p. 40, *albiventris*, p. 41, Prussia, BRISCHKE, Schr. Ges. Danz. (n.s.) viii, n. spp.
- Polysphincta* (*Zatytopa*) *strigis*, p. 291, *P. theridii*, p. 292, *P. (Zaglyptus) kosbelei*, p. 293, N. America, HOWARD, P. E. Soc. Wash. ii; *dichroa*, Venezuela, MARSHALL, p. 67, Ann. Soc. Ent. Fr. p. 62 : n. spp.
- Prionopoda canadensis*, Ottawa, HARRINGTON, p. 98, Canad. Ent. Soc. Trans. xiv, n. sp.
- Pseudacænites*, n. g., *Pimplidarum*, for *P. moravicus*, n. sp., Mäh. Ent. Nachr. xviii.
- Psilomastax cyaneus*, Sardinia (from pupa of *Papilio hospiton*), KRIECHBAUMER, p. 101, Ent. Nachr. xviii; *P. violaceus*, = (*cyaneus*, KRIECHBAUMER, Ent. Nachr. xviii, p. 208 : n. spp.
- Rhimphalia* ? *pilosa*, Prussia, BRISCHKE, p. 39, Schr. Ges. Danz. (n.s.) viii, n. sp.
- Tryphon mesoxanthus* and *punctus*, note on; KRIECHBAUMER, p. 203, Ent. Nachr. xviii. *T. punctus*, habits, synonymy, characters; SCHNEIDER, p. 102-105, Ent. Nachr. xviii.
- T. grossus*, Prussia, BRISCHKE, p. 38, Schr. Ges. Danz. (n.s.) viii, n. sp.
- Udenia*, Förster, characters given; KRIECHBAUMER, p. 40, Ent. N. Am. xviii.

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*Apanteles* : habits and distinction by secondary parasites ; CARPENTIER,  
 Bull. Soc. L. Nord France, x, pp. 35-40 : synonymy of the American  
 species ; PATTON, Psyche, vi, p. 260.

*Arrhaphis americana*, *minuta*, Florida, ASHMEAD, Psyche, vi, p. 289, n. spp.  
*Aspicolpus borealis*, Scandinavia, THOMSON, p. 1726, Opusc. ent. xvi, n. sp.  
*Ascogaster fuscipennis*, *leptopus*, p. 1718, *clypealis*, *nigricornis*, p. 1719,  
*cynipum*, *sternalis*, *cavifrons*, *gibbiscuta*, p. 1720, *graniger*, p. 1721,  
 Scandinavia, THOMSON, Opusc. ent. xvi, n. spp.

*Blacus spinifer*, Scandinavia, THOMSON, p. 1735, Opusc. ent. xvi, n. sp.  
*Bracon furtivus*, Canada, FYLES, p. 34, Canad. Ent. xxiv ; *B. hamobaphes*,  
 Venezuela, MARSHALL, p. 68, Ann. Soc. Ent. Fr. lxi : n. spp.

*Calyptus mucronatus*, p. 1703, *strigator*, *truncatus*, p. 1704, *lapponicus*,  
*macrurus*, p. 1705, Scandinavia, THOMSON, Opusc. ent. xvi, n. spp.

*Chelonus seticornis*, Scandinavia, THOMSON, p. 1714, Opusc. ent. xvi, n. sp.  
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 navia, THOMSON, Opusc. ent. xvi, n. spp.

*Exothecus foveolator*, p. 1698, *lævis*, *flavitaris*, *lapponicus*, *pubicornis*,  
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 ent. xvi, n. spp.

*Helcon femoralis*, Scandinavia, THOMSON, p. 1725, Opusc. ent. xvi, n. sp.  
*Microgaster glomeratus*, particulars as to development of embryo and  
 larva ; KULAGIN (528). *M. sp.* parasitic on imago of *Eleodes* ;  
 RILEY (747).

*Pambolus bifusciatus*, California, ASHMEAD, Psyche, vi, p. 290, n. sp.  
*Perilitus omophli*, Algeria, with metamorphoses, LESNE, Ann. Soc. Ent.  
 Fr. lxi, pp. 305 & 308, pl. v ; *P. gracilipes*, p. 1742, *caudatus*,  
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*borealis*, p. 1745, Scandinavia, THOMSON, Opusc. ent. xvi : n. spp.

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*Rhyaiipolis obscuripes*, *varicoxa*, Scandinavia, THOMSON, p. 1692, Opusc.  
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 Scandinavia, THOMSON, Opusc. ent. xvi : n. spp.

## EVANIIDÆ, STEPHANIIDÆ, MONOMACHIDÆ, TRIGONALIDÆ.

- Aulacus sibiricola*, Centr. Siberia, p. 27, *morawitsi*, Transcaspien Rej p. 29, SEMENOW, Bull. Pétersb. (n.s.) iii, n. spp.
- Evania schlettereri*, Araxes Valley, KOHL, p. 231, Ann. Hofmu Wien, vii; *E. cribrata*, hab. ?, SEMENOW, p. 10, Bull. Pétersb. (n.s.) iii : n. spp.
- Gasteryption intermedium*, p. 13, *fallaciosum*, p. 14, *dubiosum*, *obsol. insidiosum*, p. 15, *foveiceps*, p. 17, *scheuysrewi*, p. 19, Russia, Centr. Turkestan, p. 20, *dimidiatum*, E. Siberia, p. 22, *dilutum*, Ch Turkestan, p. 23, *sibiricum*, Central Siberia, p. 24, *fortis*, Andalusia, p. 26, SEMENOW, Bull. Pétersb. (n.s.) iii : n. spp.
- Monomachus viridis*, Brasil, STADELMANN, p. 237, Berl. Ent. Zeit. x pl. vi, fig. 5, n. sp.
- Stephanus martini*, Sumatra, STADELMANN, Berl. Ent. Zeit. xxxvii, p pl. vi, fig. 4, n. sp.
- Trigonalis simoni*, Caracas, BUYSSON, p. 59, Ann. Soc. Ent. Fr. lxi, n

## CHALCIDIDÆ.

- The biology of *Chalcididæ*, HOWARD, pp. 567-588, P. U. S. Nat. xiv.
- Mode of destruction of *Coccidæ* by parasites; HOWARD, p. 351, Soc. Wash. ii.
- Odoriferous Chalcididæ*, HOWARD, P. E. Soc. Wash. ii, p. 215.
- Blastophaga*: fertilisation of *Ficus roxburghii* by; CUNNINGHAM
- B. psenes*: its value as caprifying agent; RILEY, P. Biol. Washington, vii, p. 99.
- Calocerinus*, n. g., for *Tetracnemus floridanus*, Ashm.; HOWARD, P. U. S. Nat. Mus. xv.
- Chalcura californica*, California, ASHMEAD, p. 356, P. E. Soc. Wash. n. sp.
- Cratæpus fletcherii*, Canada, ASHMEAD, p. 309, Canad. Ent. xxiv, n.
- Elasmus*: habits, *E. varius*, figured; HOWARD, Ins. Life, iv, p. 253
- Eumotus lividus*, N. America, ASHMEAD, P. E. Soc. Wash. ii, p. 288,
- Eupelmus piceus*, p. 296, *drassi*, p. 297, N. America, HOWARD, P. E. Soc. Wash. ii, n. spp.
- Eurytoma rubicola*, habits; VERHOEFF, Zool. Jahrb. Syst. vi, p. 73
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- Kapala terminalis*, Cuba, ASHMEAD, p. 358, P. E. Soc. Wash. ii, n.
- Laelaps callisto*, Venezuela, MARSHALL, p. 73, pl. iv, fig. 3, Ann. Soc. Ent. Fr. lxi, n. sp.
- Larradomorpha*, n. g., near *Polistomorpha*, p. 238, for *L. insignis*, W. Africa, p. 239, pl. vi, fig. 7, STADELMANN, Berl. Ent. Zeit. x
- Lophyrocera apicalis*, California, ASHMEAD, p. 357, P. E. Soc. Wash. n. sp.

- Melittobia* : the hosts and habits of the species discussed ; HOWARD, P. E. Soc. Wash. ii, pp. 244-248.
- M. chalybii*, N. America, ASHMEAD, p. 231, P. E. Soc. Wash. ii, n. sp.
- Mesochorus wilderi*, N. America, HOWARD, p. 298, P. E. Soc. Wash. ii, n. sp.
- Metagea schwarzii*, N. America, ASHMEAD, p. 356, P. E. Soc. Wash. ii, n. sp.
- Orasema occidentalis*, California, ASHMEAD, p. 355, P. E. Soc. Wash. ii, n. sp.
- Pentacnemus*, n. g., *Encyrtinae*, for *P. bucculatricis*, n. sp., Missouri ; HOWARD, p. 366, pl. xlvii, fig. 1, P. U. S. Nat. Mus. xv.
- Podagrion*, notes on, with fig. ; *Ins. Life*, iv, p. 243.
- Prionopelma basilica*, Venezuela, MARSHALL, p. 71, pl. iv, fig. 2, Ann. Soc. Ent. Fr. lxi, n. sp.
- Development of *Smicra clavipes* in *Stratiomys* ; HENNEGUY, C.R. cxiv, p. 133.
- Tetracladia*, n. g., *Encyrtinae*, for *T. texana*, Texas, p. 367, pl. xlvii, fig. 1, *gracilis*, Florida, p. 368, n. spp., N. America ; HOWARD, P. U. S. Nat. Mus. xv.
- Tetrastichus banksii*, Washington, HOWARD, p. 299, P. E. Soc. Wash. ii, n. sp.

## PROCTOTRUPIDÆ.

- Pristocera rosmarus*, Cameroons, STADELMANN, p. 237, pl. vi, fig. 6, Berl. Ent. Zeit. xxxvii, n. sp.
- Proacantha baiformis*, Caracas, MARSHALL, p. 75, pl. iv, fig. 5, Ann. Soc. Ent. Fr. lxi, n. sp.
- Scelio venezuelensis*, Caracas, MARSHALL, p. 74, pl. iv, fig. 4, Ann. Soc. Ent. Fr. lxi, n. sp.
- Tanyzonus*, n. g. (*Belytidae*), for *T. bolitophilæ*, n. sp., New Zealand ; MARSHALL, p. 276, Ent. M. M. xxviii : note on habits by HUDSON, p. 277. P. 308, *t. c.*, this is said to be the same as *Betyla fulva*, Cameron.

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- Embryology in parthenogenetic eggs ; HENKING (396).
- Notes on synonymy, proposing new names ; DALLA TORRE, pp. 131 & 132, Wien. ent. Z. xi.
- Andricus hartigii*, Först. : this name is valid ; CAMERON, Ent. M. M. xxviii, p. 67.
- A. cellularius*, *frequens*, Colorado, GILLETTE, p. 247, Ent. News, iii, n. spp.
- Aulax nabali*, Toronto, BRODIE, p. 13, Canad. Ent. xxiv, n. sp.
- Cynips acaciadiscoloris*, p. 153, *acacialongifolia*, p. 154, *maideni*, p. 155, Sydney, FROGGATT, P. Linn. Soc. N.S.W. (2) vii, n. spp.

- Pediaspis acerinae*, Bremi., = (*sorbi*, Tischb., and *aceris*, Först.); CAMER  
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*Rhodites rosea*, embryology of parthenogenetic eggs; HENKING, Z. w  
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*Spathogaster punctatus*, England, BIGNELL, Ent. M. M. xxviii, p. 1  
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- [*Cf.* BORRIES (111), BRISCHKE (127), BUYSSON & MARSHALL (149), F  
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- Cephus niger*, Prussia, BRISCHKE, p. 53, Schr. Ges. Danz. (n.s.) vi  
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*Evermanella*, n. g., for *Cephus cruentatus*, Everm.; JAKOWLEW, p.  
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*Xiphydria potanini*, Gan-ssu, JAKOWLEW, p. 15, Hor. Ent. Ross. x  
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- Abia*: table of characters of the subgenera and species; SEMENOW,  
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*A. symballophthalma*, W. Europe, SEMENOW, p. 510, Bull. Pétersb. (  
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- Athalia bicolor*, Transvaal, SAUSSURE, p. 226, in Distant, Naturalist Transvaal, n. sp.
- Blennocampa sibirica*, Irkutak, JAKOWLEW, p. 29, Hor. Ent. Ross. xxvi, n. sp.
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- C. major*, N. Italy, COBELLI, p. 70, Verh. z.-b. Wien, xlii (cf. SB. p. 69, t. c., where this is said to be *C. crassicornis*), n. sp.
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- Emphytus arcticus*, Sweden, NERÉN, Ent. Tidskr. xiii, p. 57, n. sp.
- Hylotoma graeffei*, *pallipes*, Triest, KRIECHBAUMER, p. 38, Ent. Nachr. xviii, n. spp.
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- Lophyrus*: observations on the Danish species and their metamorphoses; BORRIES, Ent. Med. iii, pp. 97-124, pl. ii. *L. rufus*, ravages and metamorphoses; LAMPA, Ent. Tidskr. xiii, pp. 41-44.
- Lyda carpini*, Prussia, BRISCHKE, p. 53, Schr. Ges. Danz. (n.s.) viii; *L. konowi*, Centr. Russia, JAKOWLEW, p. 9, Hor. Ent. Ross. xxvi: n. spp.
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- N. insubricus*, Milan, COBELLI, p. 70, Verh. z.-b. Wien. xlii (cf. p. 69, SB. t. c., where this is said to be *N. cæruleocarpa*, Htg.); *N. borealis*, West Greenland, FOX, P. Ac. Philad. 1892, p. 133: n. spp.
- Pachynematus quinquemontanus*, Caucasus, *gracilis*, Turkestan, JAKOWLEW, p. 27, Hor. Ent. Ross. xxvi, n. spp.
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- Rhogogastera robusta*, Gan-su, JAKOWLEW, p. 38, Hor. Ent. Ross. x n. sp.
- Schisocera*: analytic table of the European species; KONOW, Wien. ent. xi, pp. 11-18. *S. privatus*, metamorphoses; MARLATT, Ins. Life pp. 24-26, figg.
- S. ballioni*, Tiflis, p. 19, *similis*, p. 20, *austriaca*, Austria, *humerala*, (niolia, p. 21, KONOW, Wien. ent. Z. xi, n. spp.
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- Strongylogaster konowi*, Centr. Russia, JAKOWLEW, p. 30, Hor. Ent. I xxvi, n. sp.
- Synairema simoni*, Venezuela, BUYSSON, p. 59, Ann. Soc. Ent. Fr. n. sp.
- Tarpa borealis*, Irkutak, p. 10, *victoriosa*, Turkestan, p. 11, JAKOW Hor. Ent. Ross. xxvi, n. spp.
- Tenthredo maura*, F., synonymical note; KRIECHBAUMER, p. 100, Nachr. xviii.
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- Tenthredopsis kokusowi*, Centr. Russia, p. 36, *gansuensis*, China, *gr* Irkutak, p. 37, JAKOWLEW, Hor. Ent. Ross. xxvi, n. spp.
- Trichiosoma pubescens*, E. Siberia, JAKOWLEW, p. 16, Hor. Ent. xxvi, n. sp.

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*Lepidoptera* reared in Zoological Gardens, London ; THOMSON, P. Z. S. 1892, pp. 193-195.

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Remarks on upwards of 100 species of *Rhopalocera* found in Southern Siberia ; STAUDINGER, Deutsche e. Z. Lep. v, pp. 301, etc.

The *Rhopalocera* of Amurland discussed ; STAUDINGER, pp. 83-219, Romanoff Mem. vi.

Remarks on Haase's system of *Rhopalocera*, SEITZ, S. E. Z. liii, pp. 157-159.

Obtaining eggs in captivity ; WRIGHT, Canad. Ent. xxiv, pp. 70-74.

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Phylogeny of *Papilionida* ; SPULER (882).

*Cosmodesmus*, n. subg. of *Papilio* ; HAASE, Bibl. Zool. Heft. viii, p. 15.



*Doritis apollinus*, varr. described ; STAUDINGER, p. 225, Deutsche e. Lep. iv.

*Druryia antimachus*, ♀ noticed ; WATKINS, Ent. xxv, p. 143 : ♀ described STAUDINGER, p. 270, Deutsche e. Z. Lep. v.

*Ornithoptera arruana*, n. var. *valentina* ; VUILLOT, p. cxxiv, Bull. Ent. Fr. lxi. *O. flavicollis*, var., = (*olympia*, Honr.), figured, pl. fig. 1 ; HONRATH, p. 429, Berl. Ent. Zeit. xxxvi. *O. (Priamopt lydius, O. (Pompeoptera) nereis*, figured ; RIPPON, Ornithopt. Ico. *O. riedeli* figured ; SMITH & KIRBY, Rhop. ex. ii, *Papilionidæ, P. lioninx, Ornithoptera*, ii. *O. zalmoxis*, ♀ described ; STAUDINGER, p. 268, Deutsche e. Z. Lep. v. *O. priamus*, sexes of var. from Ké described ; RÖBER, pp. 263-268, Tijdschr. Ent. xxxiv. *O. poseidon* variation ; TRYON (954).

*O. andromache*, N. E. Borneo, STAUDINGER, p. 393, Deutsche e. Z. Lep. v ; *O. eumæus*, Aru Ia, RIPPON, p. 193, Ann. N. H. (6) x : also figured and described in RIPPON, Ornithopt. Icones : n. spp.

*Papilio* : the following figured and noticed—*P. (Menelaides) annex*, pl. x fig. 2, *phlegon*, fig. 3, p. 271, *P. (Atrophaneura) semperi*, pl. xlvii, fig. 1-3, p. 272, *P. (Aruminta) antonio*, fig. 4, p. 274, *P. (Pathysa) asphates*, pl. xlviii ; SEMPER, Reisen Philipp. ii, v. *P. machaon*, variety AUSTAUT, Le Nat. 1892, pp. 13, &c. *P. machaon* and *xuthus*, note red markings of hind wings of ; SANSOM, Ent. xxv, p. 43. *P. andigea*, n. var. *depelchini* ; ROBBER, p. 125, Ann. Ent. Belg. xxxvi. *alexandor*, n. var. *maccabeus* ; STAUDINGER, p. 224, Deutsche e. Z. Lep. iv. *P. macareus*, var. noticed and figured ; NICÉVILLE, p. 345, pl. fig. 1, J. Bomb. N. H. Soc. vii. *P. neumoegei*, figured, pl. xv, fig. *neptunus*, n. var. *fehri*, p. 432 ; HONRATH, Berl. Ent. Zeit. xxxvi. *schönbergianus*, ♀ described ; HONRATH, p. 441, Berl. Ent. Zeit. xxx. *P. unactus*, figured, pl. xvi ; SCOTT, Austral. Lep. ii, *sarpedon*, *lyca*, pl. xvii. *P. sisenna*, figured ; MABILLE & VUILLOT, pl. x, fig. 4, N. Lep. *P. gelon* and var. described and figured ; ROTHSCCHILD, Tr. Soc. 1892, p. 141, pl. iv. *P. antimachus*, ♀ noticed, p. 162, figured pl. v, p. 189 ; WATKINS, Ent. M. M. xxviii. *P. cresphontes*, ea stages ; BEUTENMÜLLER, p. 75, Bull. Am. Mus. iv. *P. asterius*, ii of mixed sexes ; EDWARDS, Canad. Ent. xxiv, p. 49.

*P. richelmanni*, E. Africa, WEYMER, p. 98, S. E. Z. liii ; *P. policensis* W. Africa, HOLLAND, p. 287, Ann. N. H. (6) x ; *P. catoris*, N. BORN SMITH, p. 426, Ann. N. H. (6) x ; *P. (Achillides) discordia*, Sumatra NICÉVILLE, p. 343, pl. i, fig. 2, J. Bomb. N. H. Soc. vii ; *P. godmani* Alor, RÖBER, p. 271, Tijdschr. Ent. xxxiv (fig. in xxxv) ; *P. hollan* Colorado, EDWARDS, p. 50, Canad. Ent. xxiv ; *P. mathani*, Up Amazons, OBERTHUR, Études d'Ent. xvi, p. 1, pl. ii, figs. 8 & 12 ; *garleppi*, p. 427, *lamarchei*, p. 428, Bolivia, STAUDINGER, Deutsche e. Z. Lep. v : n. spp.

*Parnassius* : mode of formation of pouch, with new organ called peraplast ; SCUNCKER, pp. 249-253, Tr. E. Soc. 1892 ; and discussed P. E. Soc. 1892, p. xxxiii. *P. apollo*, var. described ; BOSSAN

- Jahresh. Ver. Trenesin. xiii, p. 79. *P. delphius*, n. var., *cæcus*; DÖNITZ, Ent. Nachr. xviii, p. 193, fig. *P. delphius*, var. *stenosemus*, figured; HONRATH, Berl. Ent. Zeit. xxxvi, pl. xv, fig. 3. *P. delius*, larva noticed and described; SELLON, Ent. xxv, p. 234: n. var., *leonhardi*; RÜHL, p. 105, Soc. Ent. vii. *P. orleans*, pl. ii, fig. 14, *orleans-groumi*, fig. 10, p. 3, *szechenyi*, pl. ii, figs. 11 & 13, p. 3, noticed and figured; OBERTHUR, Études d'Ent. xvi.
- P. poeta*, Thibet, OBERTHUR, p. 2, pl. ii, fig. 9, Études d'Ent. xvi, n. sp.
- Pharmacophagus*, n. subg. of *Papilio*; HAASE, Bibl. Zool. Heft. viii, p. 15.
- Sericinus telamon*, variation and larva described; STAUDINGER, pp. 130-136, Romanoff Mem. vi.
- Thais polyzena*, n. var., *bipunctata*; COSMOVICI, Le Nat. 1892, p. 254.

## PIERIDÆ.

- Anthocharis charltonia*, varr. described; STAUDINGER, pp. 227-229, Deutsche e. Z. Lep. iv. *A. sara* and *reakirtii* are dimorphic forms; EDWARDS, pp. 52 & 109, Canad. Ent. xxiv.
- A. flora*, Washington, WRIGHT, p. 154, Canad. Ent. xxiv, n. sp.
- Appias lalassis*, Smith, = (*Pieris indroides*, Honr.); WEYMER, p. 121, S. E. Z. liii.
- A. flavius*, N. Borneo, SMITH, p. 427, Ann. N. H. (6) x; *A. dohertyi*, Celebes, ROTHSCHILD, p. 441, pl. v, fig. 1, Deutsche Z. Lep. v: n. spp.
- Aporia cratugi*, notes on, irregular appearance, odour, metamorphoses, &c; ECKSTEIN, Zool. Jahrb. Syst. vi, pp. 230-240. *A. potanini*, distinct from *martineti*; ALPHERAKY, p. 1, Romanoff Mem. vi.
- Belenois antsianaka*, n. varr., *drurii*, figs. 4 & 5, *persimilis*, figs. 6 & 7, *B. ramona*, figs. 1, 2, & 3, figured; SMITH & KIRBY, Rhop. ex., *Papilionidæ*, *Pierinæ*, *Belenois*, i. *B. lasti*, *nagare*, *majungana*, *isokani*, figured; SMITH & KIRBY, Rhop. ex. ii, *Papilionidæ*, *Pierinæ*, *Belenois*, pl. ii.
- Callidryas eubule*, life history of; DYAR, Canad. Ent. xxiv, p. 7. *C. senneæ*, habits; PANTON, J. Inst. Jamaica, i, p. 106.
- Callosune bacchus* and *mrogoroana*, distinctions of; VUILLOT, p. viii, Bull. Soc. Ent. Fr. lxi.
- Colias*: characters of the palaearctic species; BRAMSON, Le Nat. 1892, pp. 83, 91, 104. *C. rautieri*, Guer., = (*flaviola*, Blanch., *minuscule*, Butl.); REED, p. 68, Act. Soc. Chili, i. *C. wislotti*, varr. described; STAUDINGER, pp. 230-232, Deutsche e. Z. Lep. iv. *C. werdandi*, and *hecla*, varietal note; LAMPA, Ent. Tidskr. xiii, p. 249. *C. viluensis*, note on; GRAESER, p. 210, Berl. Ent. Zeit. xxxvii. *C. edusa*, earlier stages; FROHAWK, Ent. xxv, p. 201. *C. hyale*, earlier stages; FROHAWK, t. c. pp. 271-274. *C. christina*, larva and pupa noticed; EDWARDS, p. 110, Canad. Ent. xxiv. *C. scudderi* and *nastes*, food-plants; EDWARDS, p. 54, *meudii* and *elis*, characters noticed, p. 55, Canad. Ent. xxiv. *C. philodice*, albino; EDWARDS, p. 49, t. c.

- Delias abnormis*, n. var. *euryzantha*; HONRATH, p. 435, Berl. Ent. Zeit. xxxvi. *D. peribœa*, n. var. *wallacei*; ROTHSCCHILD, p. 441, pl. v, fig. Deutsche e. Z. Lep. v.
- D. parthenia*, Borneo, STAUDINGER, p. 449, Deutsche e. Z. Lep. v.; *tobahana*, p. 571, *hageni*, p. 572, Sumatra, ROGENHOFER, Verh. z. Wien, xlii : n. spp.
- Eronia cleodora*, n. var. *latimarginata*; WEYMER, p. 96, S. E. Z. liii.
- Huphina celebensis*, p. 439, pl. iv, figs. 1 & 2, *dissimilis*, p. 440, pl. v, fig. 5 & 6, ROTHSCCHILD, Deutsche e. Z. Lep. v, n. spp.
- Isias flavipennis*, Smith, = (*pyritis*, Weym.); WEYMER, p. 12 S. E. Z. liii.
- I. kühni*, Wetter, RÖBER, p. 287, Tijdschr. Ent. xxxiv (fig. in xxxv n. sp.
- Leuconea cratægi*, n. var. *alepica*; COSMOVICI, p. 254, Le Nat. 1892.
- Leucophasia amurensis*, n. var. *vernalis*; GRAESER, p. 209, Berl. Ent. Zeit. xxxvii.
- Metaporia harrietae*, Bhutan, NICÉVILLE, p. 341, pl. i, fig. 1, J. Bomb. N. H. Soc. vii, n. sp.
- Pieris (Mylothris) rubricosta*, Mab., = (*mackenziana*, Sharpe), p. 61, figured, pl. x, fig. 3; MABILLE & VUILLOT, Nov. Lep. *P. rapæ*, var.; SWIERSTRA, p. 337, pl. xvii, figs. 1 & 2, Tijdschr. Ent. xxiv. *P. oberthuri*, figured, pl. i, fig. 2, *P. larraldei*, n. var. *melania*, p. 5, pl. i, fig. 5, *nutans*, p. 6, fig. 3; OBERTHUR, Études d'Ent. xvi; *P. zeurippe*, ♂ var. figured; POUJADE, pl. xi, figs. 1 & 1a, N. Arch. Mus. Paris (3) iii. *P. brassicae*, immigration noticed; KERRY, Essex Nat. vi, p. 205. *P. brassicae* and *rapæ*, pupal variation in colour; POULTON, Tr. E. Soc. 1892, pp. 437-446. *P. oleracea* and *Pontia protodice* are disappearing in N. America where *P. brassicae* is introduced, Soc. Ent. vii, p. 94; but cf. SMITH, t. c. p. 131.
- P. hilaru*, W. Africa, KARSCH, p. 169, Ent. Nachr. xviii; *P. hastata* Yunnan, OBERTHUR, p. 5, pl. i, fig. 6, Études d'Ent. xvi; *P. fruhstorferi*, Java, HONRATH, p. 434, pl. xv, figs. 4 & 4a, Berl. Ent. Zeit. xxxvi; *P. oberthuri*, p. 277, *synchroma*, p. 278, Flores, RÖBER Tijdschr. Ent. xxxiv (figg. in xxxv) : n. spp.
- Tachyris adelpha*, Alor, p. 281, *paula*, Wetter, p. 282 (with fig. in xxxv) RÖBER, Tijdschr. Ent. xxxiv, n. spp.
- Terias mandarinula*, E. Africa, HOLLAND, Ent. xxv (Supp.) p. 91, n. sp.
- Thestias reinwardtii*, figured, pl. xv, fig. 2, noticed, p. 249; SNELLEN Tijdschr. Ent. xxxiv. *T. flavipennis*, ♀ figured; SWIERSTRA pl. 16 : described; SNELLEN, p. 335, t. c.

## DANAIDÆ.

- Anosia plezippus*, note on early larva; SCUDDER, Psyche, vi, p. 250.
- Chlorochropsia*, n. g., for *C. dohertyi*, n. sp., Celebes, pl. iv, fig. 3; BOTHCHILD, p. 430, Deutsche e. Z. Lep. v.
- Elsa*, n. g., near *Danaïs*, for *E. morgeni*, n. sp., Cameroons; HONRATH, p. 436, pl. xv, fig. 5, Berl. Ent. Zeit. xxxvi.

- Euploea schreiberi*, Butl., = (*maasseni*, Weym.) ; WEYMER, p. 119, S. E. Z. liii. *E. alcatraz*, p. 1, *doubledayi*, *durrsteini*, = (*mesocala*), p. 2, synonymy ; SNELLEN, Tijdschr. Ent. xxxv. *E. perdita*, n. var., *swierstræ* ; SNELLEN, p. 339, pl. xvii, fig. 4, Tijdschr. Ent. xxxiv. *E. callithoë*, ♀ described ; TRYON (954). *E. hansemanni*, ♀ described and figured, p. 442, pl. xv, fig. 6, *callithoë*, ♀ described, p. 443 ; HONRATH, Berl. Ent. Zeit. xxxvi. *E. corinna*, figured ; SCOTT, Austral. Lep. ii, pl. xvi. *E. harrisii* and allies, great variability ; NICÉVILLE, p. 247, Tr. E. Soc. 1892.
- E. kuhni*, Flores, p. 294 (fig. in vol. xxxv), *oropina*, Wetter, p. 296, *sobrina*, Goram, *neptis*, Flores, p. 297, *nepos*, Goram, p. 298 (fig. in xxxv), *jacobsoni*, Wetter, p. 299 (fig. in xxxv), *compta*, Timor Laut, p. 300 (fig. in xxxv), RÖBER, Tijdschr. Ent. xxxiv, n. spp.
- E. (Calliploea) parvior*, N. Guinea ; TRYON (954).
- Glinama euctemon*, ♀ = (*configurata*, Feld.) ; ROTHSCHILD, p. 432, Deutsche e. Z. Lep. v.
- Nasuma celebensis*, Celebes, STAUDINGER, p. 431, pl. iv, fig. 4, Deutsche e. Z. Lep. v. n. sp.

## ACRÆIDÆ and HELICONIIDÆ.

- Acræa (Telchinia) anemosa*, *buettneri*, abdominal pouch of ♀ figured ; ROGENHOFER, pp. 574, 575, & 579-581, Verh. z.-b. Wien, xlii. *A. vespertalis*, figs. 1 & 2, *crystallina*, figs. 3 & 4, *bomba*, figs. 5 & 6, *nelsoni*, figs. 9 & 10, figured ; SMITH & KIRBY, Rhop. ex. *Nymphalida*, *Acræinæ*, *Acræa*, pl. iii. *A. cerasa*, *iturina*, *igola*, *andromba*, ♂ ♀, *mombasa*, figured, SMITH & KIRBY, t. c., *Nymphalidæ*, *Acræinæ*, *Acræa*, iv. *A. dohertyi*, ♀ described and figured ; ROTHSCHILD, p. 435, Deutsche e. Z. Lep. v.
- A. ombria*, p. 82, *albomaculata*, p. 83, E. Africa, *adrasta*, W. Africa, p. 85, WEYMER, S. E. Z. liii ; *A. balina*, W. Africa, KARSCH, p. 170, Ent. Nachr. xviii ; *A. (Telchinia) welhoitschii*, Angola, ROGENHOFER, p. 573, Verh. z.-b. Wien, xlii ; *A. pharsaloides*, *minima*, *abbottii*, E. Africa, HOLLAND, Ent. xxv (Supp.) p. 89 ; *A. marmorata*, Madagascar, SMITH & KIRBY, Rhop. ex. *Nymphalidæ*, *Acræinæ*, *Acræa*, p. 9, pl. iii : n. spp.
- Heliconius rubellius*, figs. 1 & 2, Columbia, *amandus*, fig. 3, p. 1, *phyllidis*, fig. 4, p. 2, *anacreon*, fig. 5, p. 3, SMITH & KIRBY, Rhop. ex. *Nymphalidæ*, *Heliconinæ*, *Heliconius*, i, n. spp.

## NYMPHALIDÆ.

- Abrota pratti*, figured ; LEECH, pl. xiv, figs. 7 & 8, Butt. China.
- Ageronia* : sound-apparatus described ; HAMPSON, P. Z. S. 1892, p. 190.
- Amnosia martini*, Sumatra, HONRATH, p. 439, Berl. Ent. Zeit. xxxvi, n. sp.

- Apatura*: Chinese species figured, and varr. described; LEE pp. 153-164, pla. xv & xvi, Butt. China. *A. fasciola*, *subcaerulea*, *fulva*, Leech, figured; SMITH & KIRBY, Rhop. ex. *Nymphalini* *Nymphalina*, *Apatura*, i.
- Apatura laverna*, China, LEECH, p. 164, pl. xv, fig. 6, Butt. China, n. sp.
- Araschnia*: Chinese species figured, varr. described; LEECH, pp. 268-272, pl. xxvi, Butt. China.
- A. doris*, China, LEECH, p. 272, pl. xxvi, figs. 4 & 5, Butt. China, n. sp.
- Argynnis*: Chinese species figured, and varr. described; LEECH pp. 222-244, pla. xxii-xxiv, Butt. China. *A. xenobia*, figured OBERTHUR, p. 7, pl. i, fig. 1, Études d'Ent. xvi. *A. lathonia* = (*anna*, Blanchd.); REED, p. 68, Act. Soc. Chili, i. *A. pales*, n. sp. killiasi; RÜHL, Soc. Ent. vii, p. 113. *A. pandora*, n. var. *dac* HORMUZAKI, Ent. Nachr. xviii, p. 1. *A. paphia*, n. var. *nigric* COSMOVICI, p. 256, Le Nat. 1892. *A. epithore*, early stage EDWARDS, p. 108, Canad. Ent. xxiv. *A. paphia*, colour of larva surroundings; POULTON, Tr. E. Soc. 1892, p. 437. Oviposition species of, SKINNER, p. 128, Canad. Ent. xxiv.
- A. rosea*, Roumania, COSMOVICI, p. 256, Le Nat. 1892; *A. pene* Amurland, STAUDINGER, p. 195, Romanoff Mem. vi, and p. Deutsche e. Z. Lep. iv; *A. ornatissima*, China, LEECH, p. pl. xxii, figs. 1 & 2, Butt. China; *A. owens*, Mt. Shasta, p. 105, *nelia*, Colorado, p. 106, EDWARDS, Canad. Ent. xxiv: n. spp.
- Atella sinha*, specific validity; SNELLEN, p. 5, Tijdschr. Ent. xxxv.
- Athyma*: Chinese species figured, varr. described; LEECH, pp. 167-172, pla. xvi & xvii, Butt. China.
- A. recurva*, W. China, LEECH, p. 176, pl. xvii, fig. 9, Butt. China; *A. a* Borneo, STAUDINGER, p. 452, Deutsche e. Z. Lep. v: n. spp.
- Cutana duodecimpunctata*, note on; SNELLEN, p. 4, Tijdschr. Ent. xi
- Charaxes agoba*, Dist., = (*homerus*, Stdgr.), *portkos*, Smith, = (*n* Stdgr.); STAUDINGER, p. 223, Deutsche e. Z. Lep. iv. *C. nic* Smith, = (*ogovensis*, Holl., = *hamatus*, Dew.), *C. hildebrandti*, = (*talaguge*, Holl.); WEYMER, p. 120, S. E. Z. liii. *C. rothae* n. n. for *ganymedes*, Leech, *nec* Westw., p. 128, figured, pl. xiv; LEECH, Butt. China. *C. pelias*, n. var. *tanganika*; ROBBER, p. Ann. Ent. Belg. xxxvi. *C. nitebis*, figured, pl. vi, fig. 3, O. n. var. *dohertyi*, p. 437, pl. vi, fig. 2, Deutsche e. Z. Lep. v.
- C. lactetinctus*, W. Africa, KARSCH, p. 113, Ent. Nachr. xviii; *C. od* W. Africa, p. 260, *georgius*, Miudoro, p. 262, STAUDINGER, Deutsche e. Z. Lep. v.: n. spp.
- Cirreochroa niassica*, Nias I., HONRATH, p. 437, Berl. Ent. Zeit.: n. sp.
- Crenis umbrina*, W. Africa, KARSCH, p. 114, Ent. Nachr. xviii; *C. g* W. Africa, KARSCH, p. 173, t. c.: n. spp.
- Cymothoe blasi*, E. Africa, WEYMER, p. 90, S. E. Z. liii, n. sp.
- Doleschallia pfeili*, New Ireland, HONRATH, p. 438, pl. xv, fig. 7, Ent. Zeit. xxxvi, n. sp.

- Euphædra edwardsii*, Hoeven, = (*pralinas*, Dbl.), *inanum*, Butl., = (*vespasia*, Moesch.); WEYMER, p. 120, S. E. Z. liii.
- E. judith*, Sierra Leone, WEYMER, p. 88, S. E. Z. liii, n. sp.
- Euptoieta hortensia*, Blanch., = (*Argynnis valdiviana*, Phil.) ; REED, p. 68, Act. Soc. Chili, i.
- Eurytela vellea*, figured, pl. x, fig. 1 ; MABILLE & VUILLOT, Nov. Lep.
- Euthalia* : Chinese species figured and varr. described ; LEECH, pp. 135-140, pl. xxi, Butt. China.
- E. pyrrha*, China, LEECH, p. 137, pl. xxi, fig. 4, Butt. China, n. sp.
- Godartia* : generic characters and components ; SNELLEN, p. 8, Tijdschr. Ent. xxxv.
- Grapta gigantea*, figured, pl. xxv, fig. 6, *c-album*, varr. described ; LEECH, pp. 263-265, Butt. China.
- Harma canis*, migration of, larva and chrysalis figured ; HOLLAND, Psyche, vi, pl. v, figs. 4 & 5, p. 215.
- Harmilla*, n. g., near *Cymothoë*, for *H. elegans*, n. sp., Cameroons ; AURIVILLIUS, p. 200, Ent. Tidskr. xiii.
- Hestina mena*, variation ; LEECH, p. 143, Butt. China.
- Hypolimnas angustolimbata*, E. Africa, WEYMER, p. 87, S. E. Z. liii, n. sp.
- Junonia touhilimasa*, Tanganyika, VUILLOT, p. cxlviii, Bull. Soc. Ent. Fr. lxi, n. sp.
- Kallima spiridion*, *knyvetti*, figured ; SMITH & KIRBY, Rhop. ex. *Nymphalidæ*, *Kallima*, i.
- Limenitis* : Chinese species figured, varr. described, pp. 178-188, pls. xvi & xvii ; LEECH, Butt. China. *L. sibylla*, n. var. *stenotania* ; HONRATH, p. 440, Berl. Ent. Zeit. xxxvi. *L. albomaculata*, figured and described ; OBERTHUR, p. 7, pl. ii, fig. 15, Études d'Ent. xvi. *L. weidemeyerii*, early stages ; EDWARDS, p. 107, Canad. Ent. xxiv.
- L. doerriesi*, Amurland, STAUDINGER, p. 173, pl. xiv, fig. 1, Romanoff Mem. vi ; *L. hageni*, Sumatra, STAUDINGER, p. 452, Deutsche e. Z. Lep. v : n. spp.
- Melitæa* : Chinese species figured ; LEECH, pl. xxiv, Butt. China. *M. maculata*, Brem., generic position ; SNELLEN, p. 6, Tijdschr. Ent. xxxv. *M. anicia*, larva going over two years ; EDWARDS, p. 53, Canad. Ent. xxiv. *M. chalcodon*, oviposition ; KUNZE, p. 190, Canad. Ent. xxiv.
- M. bellona*, W. China, LEECH, p. 219, pl. xxiv, figs. 1-5, Butt. China, n. sp.
- Neptis* : Chinese species figured, varr. described ; LEECH, pp. 190-207, pls. xviii & xix, Butt. China. *N. biafra*, n. var. *continuata* ; HOLLAND, Ent. News, iii, p. 249.
- Neptis nicobule*, *metanira*, *mizophyes*, Ogowe Valley, HOLLAND, Ent. News, iii, p. 249, pl. ix ; *N. thestias*, W. China, LEECH, p. 196, pl. xviii, fig. 3, Butt. China ; *N. patalina*, Philippine Is., SEMPER, p. 347, Reisen Philipp. ii, v ; *N. florensis*, Flores, SNELLEN, p. 238, Tijdschr. Ent. xxxiv : n. spp.
- Nymphalis freyi*, Nossibé, BRANCSIK, p. 161, pl. vii, fig. 8, Jahresh. Ver. Trencsin, xiii, n. sp.

- Palla lichen*, Dbl., p. 93, *falcata*, Butl., p. 94, ♀s described; WEYMER, S. E. Z. liii.
- P. publius*, Sierra Leone, STAUDINGER, p. 267, Deutsche e. Z. Lep. v; *rectifascia*, W. Africa, WEYMER, p. 91, S. E. Z. liii : n. sp.
- Phyciodes gorgone*, Hub., = (*ismeria*, Boisd., and *carlota*, Reak.) ; WEYMER, p. 119, S. E. Z. liii.
- Precis serena*, Sierra Leone, WEYMER, p. 86, S. E. Z. liii, n. sp.
- Prothoe calydonia*, = (*belisama*, Crowley); WEYMER, p. 120, S. E. Z. l
- Pseudacraea uhelda*, Mab., figured; MABILLE & VUILLOT, pl. x, fig. Nov. Lep. *P. poggei*, ♂ described and figured; BUTLER & ROTCHILD, p. 202, pl. x, fig. 2, Tr. E. Soc. 1892.
- P. warburgi*, Cameroons, AURIVILLIUS, Ent. Tidskr. xiii, p. 200; *clarkii*, Congo River, BUTLER, p. 201, pl. x, fig. 1, Tr. E. Soc. 1892, n. spp.
- Pseudargynnis*, n. g., for *Catuna duodecimpunctata*, auct.; KARSCH, p. 1 Ent. Nachr. xviii.
- Pyrameis cardui*, life-history; DYAR, Canad. Ent. xxiv, p. 6. *P. u* phylogenetic note; SMITH, p. 27, Ent. xxv.
- Rahinda sandaka*, Borneo, BUTLER, p. 120, P. Z. S. 1892, n. sp.
- Stibochiona persephone*, Borneo, STAUDINGER, p. 451, Deutsche e. Z. L v, n. sp.
- Symbrenthia lucina*, *hippoclus*, distinctive characters; SEMPER, p. 3 Reisen Philipp. ii, v.
- Terinos nova-guineensis*, New Guinea; TRYON (1954), n. sp.
- Thaleropsis trigona*, W. Africa, HOLLAND, Ann. N. H. (6) x, p. 284, n. sp.
- Timelaea nana*, W. China, LEECH, p. 246, pl. xxiii, fig. 8, Butt. China, n. sp.
- Vanessa fenestra*, Leech, referred to *Dilipa*, = (*Apatura chrysus*, Obert p. 165, figured, pl. xiv, fig. 2; LEECH, Butt. China. *V. urticae* variation in China; LEECH, p. 258, pl. xxv, fig. 1, Butt. China. *V. urticae* variation produced by exposure of pupæ to different temperatures; MERRIFIELD, p. 36, Tr. E. Soc. 1892. *V. urticae* and *io*, colour pupæ and surroundings; POULTON, pp. 391-402, *polychloros* and *atalanta*, pp. 432-437. *V. urticae*, gilded appearance of pupæ discussed; BATESON, p. 210-214.
- Vanessula*: characters and position discussed, *V. milca*, fig., p. 171, (sub *Liptena*) *milca*, Hew., = (*buchneri*, Dew.), p. 172; KARSCH, Ent. Nachr. xviii.

## MORPHIDÆ.

- Clerome arope*, figured, pl. i, fig. 4; LEECH, Butt. China.
- Discophora dis*, Sumatra, &c., NICÉVILLE, p. 325, pl. h, fig. 3, J. Boiss. N. H. Soc. vii, n. sp.
- Enispe lunatus*, figured; LEECH, Butt. China, pl. i, figs. 1 & 2.
- Morpho sulkowskyi*, n. var. *psyche*; STAUDINGER, Deutsche e. Z. Lep. p. 197.
- Stichophthalma howqua*, var. figured, pl. i, fig. 3; LEECH, Butt. China.
- S. neumogeni*, W. China, LEECH, p. 114, pl. i, fig. 5, Butt. China, n. sp.

## SATYRIDÆ.

- MOORE continues his descriptions and figures of E. Indian *Satyridæ* in Lep. Ind. i, pp. 177-310, pls. lxxv-xciv.
- Acrophthalmia thalia*, figured; LEECH, pl. x, fig. 1, Butt. China.
- A. misarte*, Philippines, SEMPER, p. 327, Reisen Philipp. ii, v, n. sp.
- Amecera majuscula*, W. China, LEECH, Butt. China, p. 67, pl. xii, fig. 6, n. sp.
- Archondesa*, n. g., type, *Lethe lanaris*, Butl.; MOORE, p. 270, Lep. Ind. i.
- Bicyclus ephorus*, W. Africa, WEYMER, p. 79, S. E. Z. liii, n. sp.
- Blanaida pulahoides*, Naga Hills, MOORE, p. 304, pl. 94, fig. 2, Lep. Ind. i, n. sp.
- Callarge*, n. g. for *Zethera sagitta*, Leech, which is figured, pl. xii, fig. 1; LEECH, p. 57, Butt. China.
- Callerebia phyllis, albipuncta, oriza*, figured; LEECH, pls. ix & xii, Butt. China.
- Calysime perseoides*, Burma, p. 179, pls. lx, fig. 2, & lxi, fig. 1, *nicobarica*, Nicobar Is., *intermedia*, p. 187, *subdita*, p. 194, pl. lxxv, figs. 1, a-h, E. India, *rama*, pl. 57, fig. 3, Ceylon, *andamana*, pl. 66, fig. 1, Andaman Is., p. 196, MOORE, Lep. Ind. i, n. spp.
- Catargynnis*, n. n. for *Pseudomaniola (infra)*; RÖBER, p. 284, Exot. Schmett. Theil ii.
- Chionobas chryxus, calais*, figured, *Chionobas ii, jutta, Chionobas v, crambis, brucci, Chionobas vi*; EDWARDS, Butt. N. Am. (3).
- Choranesa*, n. g., type *Lethe trimacula*, Leech; MOORE, p. 270, Lep. Ind. i.
- Cœlites adamsoni*, p. 229, pl. 75, fig. 1, *binghami*, p. 230, fig. 3, E. India, MOORE, Lep. Ind. iii, n. spp.
- Cœonympha pamphilus*, n. var. *bi-pupillata*; COSMOVICI, p. 264, Le Nat. 1892.
- Debis* (sub *Satyrus*) *hyrania*, Koll., = (*goalpara*, Moore), p. 3, *samio*, Dbl., = (*manthara*, Feld.), p. 4; SNELLEN, Tijdschr. Ent. xxxv.
- Dionana*, n. g., type *Lethe margaritæ*, Elw.; MOORE, p. 271, Lep. Ind. i.
- Epinephele monarchus*, Bl., = (*valdiviæ*, Feld.); REED, p. 68, Act. Soc. Chili, i. *E. tithonus*, n. var. *mincki*; SEEBOLD, p. 467, Berl. Ent. Zeit. xxxvi. *E. janira*, var. *cinerascens*; FUCHS, JB. nass. Ver. xlv, p. 85.
- E. cinerea, erebiformis*, Roumania, COSMOVICI, p. 264, Le Nat. 1892, n. spp.
- Erebia*: Chinese species figured, varr. described, LEECH, pl. ix, pp. 97-101, Butt. China. *E. medusa*, n. var. *procopiani*; HORMUZAKI, Ent. Nachr. xviii, p. 2. *E. sofia*, Streck., = (*ethela*, Edw.); STRECKER, Ent. News, iii, p. 255. *E. melas, metamorphoses*; DOGNIN, p. 211, Le Nat. 1892.
- E. nigra*, Roumania, COSMOVICI, p. 264, Le Nat. 1892, n. sp.
- Harima*, n. g., type *Neope callipteria*, Butl.; MOORE, p. 299, Lep. Ind. i.
- Idiomorphus vala*, larva described; HOLLAND, Psyche, vi, p. 214.
- Kerrata*, n. g., for *Lethe tristigmata*, Elw.; MOORE, p. 285, Lep. Ind. i.



- Kirrodessa*, n. g., type *Debis sicelis*, Hew.; MOORE, p. 237, Lep. Ind. i.  
*Lethe*: Chinese species figured, and varr. described; LEECH, pp. 18-4  
 pls. iii-vi, Butt. China.
- L. proxima*, W. China, LEECH, p. 32, pl. vi, fig. 8, Butt. China, n. sp.
- Mandarinia*, n. g., for *Mycalesis regalis*, Leech; LEECH, Butt. China, p.
- Melanargia leda*, Leech, = (*Arge yunana*, Oberth.); LEECH, p. 60, Bu  
 China. *M. titea*, n. var. *titania*; STANDFUSS, p. 659, pl. xv, fig.  
 Romanoff Mem. vi.
- M. grumi*, Kurdistan, STANDFUSS, p. 661, pl. xv, fig. 2, Romanoff Me  
 vi, n. sp.
- Mycalesis*: Chinese species figured and n. varr. described; LEECH, pp. 1  
 15, pl. ii, Butt. China. *M. dixon*, Hew., = (*Messaras ophthalmic*  
 Westw.); WEYMER, p. 119, S. E. Z. liii.
- M. anisops*, W. Africa, KARSCH, p. 176, Ent. Nachr. xviii; *M. uni*  
 Moupin, LEECH, Butt. China, p. 15, pl. ii, fig. 9; *M. kina*, Born  
 STAUDINGER, p. 451, Deutsche s. Z. Lep. v; *M. (Calysime) pernota*  
 N. Guinea, TRYON (954): n. spp.
- Nemesis*, n. g. (for *Lethe* group, 1 pt., Nicéville); MOORE, p. 237, L  
 Ind. i.
- Neomans servilia*, Wllgr., = (*Satyrus decorata*, Butl.); REED, p. 68, A  
 Soc. Chili, i.
- Neope*: Chinese species figured, pls. vii & viii, varr. described, pp. 48  
 54; LEECH, Butt. China.
- Neorina patria*, Leech, figured, pl. xii, fig. 2; LEECH, Butt. China.
- N. westwoodii*, p. 226, pl. lxxiv, fig. 2, E. India, MOORE, Lep. Ind. i, n.
- Neosatyrus ambiorix*, Wllgr., = (*minimus*, Butl.), *violaceus*, Butl.,  
 (*ochreivittatus*, Butl.); REED, p. 68, Act. Soc. Chili, i.
- Ninguta*, n. g., type *Pronophila schrenkii*, Men.; MOORE, p. 310, Lep. Ind.
- Pararge præusta*, *catena*, *deidamia*, figured, pls. xi & xii; LEECH, Bu  
 China. *P. megæra*, var. *mediolugens*; FUCHS, p. 87, JB. nass. V  
 xlv.
- Patala*, n. g. (type *Zophoessa yama*, Moore), p. 305, with *P. yamoi*  
 n. sp., N. India, p. 307, pl. xciv, fig. 4; MOORE, Lep. Ind. i.
- Pegada*, n. g., for *Mycalesis oculatissima*, Pouj.; MOORE, pp. 224, L  
 Ind. i.
- Placilla*, n. g. (type *Lethe christophi*, Leech); MOORE, p. 253, L  
 Ind. i.
- Pseudomaniola*, n. g., p. 222 (replaced by *Caturgynnis*, p. 284), for part  
*Dadama*, Hew.; RÖBER, Exot. Schmett., Theil ii.
- Ptychandra mindorana* (Stdgr.), Philippines, SEMPER, p. 329, Rei  
 Philipp. ii, v, n. sp.
- Putlia*, n. n. for *Charma*, Doh. (preoco.); MOORE, p. 287, Lep. Ind. i.
- Ragadia critolaus*, Burma, NICÉVILLE, p. 322, J. Bomb. N. H. Soc.  
 pl. h, fig. 1; *R. melita*, Borneo, STAUDINGER, p. 450, Deutsche e.  
 Lep. v: n. spp.
- Ranghia*, n. g. (for *Lethe* group, 1 pt., Nicéville), p. 232, with *R. pegua*  
 n. sp., Burma, p. 235; MOORE, Lep. Ind. i.

- Samantu bethumi*, p. 205, pl. lxviii, fig. 4, *davisoni*, p. 206, fig. 3, E. India, MOORE, Lep. Ind. i, n. spp.
- Satyrus autonoë*, *dryas*, n. varr. described and figured; LEECH, pp. 69 & 70, pls. xi & xiii, Butt. China. *S. autonoë*, var. *extrema*, figured, pl. i, fig. 1, Romanoff Mem. vi. *S. bischoffi*, varr. described; STAUDINGER, p. 237, Deutsche e. Z. Lep. iv.
- S. fuvonius*, Malatia, STAUDINGER, p. 239, pl. iii, fig. 1, Deutsche e. Z. Lep. iv, n. sp.
- Sinchula*, n. g. (for *Lethe* group, 3 pt., Nicéville); MOORE, p. 275, Lep. Ind. i.
- Trophonina*, n. g., for *Lymanopoda acraeida*, Butl.; RÖBER, p. 222, Exot. Schmett., Theil ii (omission from 1889 Record).
- Ypthima*: Chinese species figured, and varr. described; LEECH, pp. 81-91, pls. ix & x, Butt. China. *Y. baldus*, figured; SNELLEN, pl. xv, fig. 1, p. 236, Tijdschr. Ent. xxxiv.
- Y. argillosa*, p. 133, *nigricans*, p. 135, Java, SNELLEN, Tijdschr. Ent. xxxv; *Y. florensia*, Flores, SNELLEN, p. 235, pl. xiv, fig. 3, Tijdschr. Ent. xxxiv; *Y. celebensis*, Celebes, ROTHSCILD, p. 433, pl. v, figs. 3 & 4, Deutsche e. Z. Lep. v; *Y. subarctous*, New Guinea, TRYON (1954): n. spp.
- Zophoessa helle*, *procne*, *argentata*, *dora*, figured; LEECH, pl. vii, Butt. China.
- Z. gummiei*, p. 294, pl. xci, fig. 3, *elwesi*, p. 298, pl. xcii, fig. 3, Bhutau; MOORE, Lep. Ind. i, n. spp.

#### ELYMNIIDÆ and ERYCINIDÆ.

- Drepanula*, n. g., for *Lemonias calous*, Stdgr.; RÖBER, p. 246, Exot. Schmett., Theil ii (omitted in Zool. Rec. of last year).
- Dyctis esacoides*, Perak, NICÉVILLE, p. 323, pl. H, fig. 2, J. Bomb. N. H. Soc. vii, n. sp.
- Elymnias borneensis*, Borneo, SMITH, p. 428, Ann. N. H. (6) x, n. sp.

#### LYCENIDÆ

- Lycenidæ* of the South Pacific Is., with numerous synonymical and critical remarks; DRUCE, P. Z. S. 1892, pp. 434-446, pl. xxvii.
- Acesina sephirella*, fig. 8, *ariel*, fig. 9, figured; ELWES, pl. xlv, P. Z. S. 1892.
- Allotinus panormis*, Karen Hills, ELWES, p. 619, P. Z. S. 1892, n. sp.
- Aphneus vulcanus*, n. var. *maximus*, p. 637, pl. xliii, fig. 5, *sani*, var. ?, p. 638, fig. 6; ELWES, P. Z. S. 1892.
- Argyrocheila*, n. g., for *A. undifera*, n. sp., W. Africa; STAUDINGER, p. 215, Deutsche e. Z. Lep. iv: figured; SMITH & KIRBY, Rhop. ex. ii, African *Lycenidæ*, pl. xviii, figs. 11 & 12.
- Arhopala ace*, p. 329, pl. H, fig. 13, *acesites*, p. 330, fig. 14, Perak, *arca*, Celebes, p. 331, fig. 15, *asia*, Malay Penins., fig. 16, *æta*, Burma, fig. 17, p. 333, NICÉVILLE, J. Bomb. N. H. Soc. vii, n. spp.

- Aslauga marginalis*, figured; SMITH & KIRBY, Rhop. ex. ii, African *Lycænida*, pl. xix, figs. 15 & 16.
- Camena carmentalis*, Khasi Hills, NICÉVILLE, p. 335, pl. H, fig. 10, Bomb. N. H. Soc. vii; *C. icetoides*, p. 636, pl. xlv, fig. 3, *cleoboides*, p. 637, figs. 4 & 5, Karen Hills, ELWES, P. Z. S. 1892: n. spp.
- Catipacilma subochrea*, Karen Hills, ELWES, p. 640, pl. xlv, fig. 1, P. Z. S. 1892.
- Chrysophanus abbottii*, E. Africa, HOLLAND, Ent. xxv (Supp.), p. 90, n. sp.
- Curetis stigmata* (Moore), RÖBER, p. 318, Tijdschr. Ent. xxxiv, n. sp.
- Cyaniris ceyz*, Java, NICÉVILLE, p. 328, pl. H, figs. 6 & 7, J. Bomb. N. Soc. vii, n. sp.
- Deudorix cærulea*, Druce, = (*obscurata*, Trim.), the species referred *Rapala*; DRUCE, Ent. M. M. xxviii, p. 65.
- D. getulia*, Khasi Hills, NICÉVILLE, p. 338, pl. H, fig. 12, J. Bomb. N. Soc. vii; *D. verriculata*, Celebes, SNELLEN, p. 257, pl. xv, fig. Tijdschr. Ent. xxxiv; *D. mathewi*, New Hebrides, DRUCE, p. 4, P. Z. S. 1892, pl. xxvii, fig. 9: n. spp.
- Drupadia casarea*, Weym., = (*Sithon ravindra*, var. *niasica*, Stldg. WEYMER, p. 121, S. E. Z. liii.
- Durbania gerda*, figured; SMITH & KIRBY, Rhop. ex. i, African *Lycæni* pl. xvi, figs. 9 & 10.
- D. cornucopiae*, W. Africa, HOLLAND, p. 286, Ann. N. H. (6) x, n. sp.
- Euppsychellus*, n. g., near *Plebeius*, for *dionysius*, Boisd.; RÖBER, p. 273, Tijdschr. Ent. xxxiv, and p. 273, Exot. Schmett., Theil ii.
- Epitola doleta*, *henleyi*, *goodii*, *barombiensis*, *catuna*, figured; SMITH & KIRBY, Rhop. ex. i, African *Lycænida*, pl. xvii.
- E. ciconia*, Sierra Leone, SMITH & KIRBY, Rhop. ex. i, African *Lycæni* pl. xvii, p. 58, n. sp.
- Hewitsonia kirbyi*, Dew., = (*preussii*, Stldg.); STAUDINGER, p. 232, Deutsche e. Z. Lep. iv.
- Hypochlorosis*, n. g., for *Sithon antipha*, Hew.; RÖBER, p. 267, Exot. Schmett., Theil ii.
- Hypolycaena rava*, W. Africa, HOLLAND, p. 286, Ann. N. H. (6) x, n. sp.
- Iolais julianus*, Staud., and *alcibiades*, Don., noticed, *I. julius*, Staud. (*lekanion*, Druce); DRUCE, p. 185, Ent. M. M. xxviii.
- Jamides pulcherrima*, pl. xxvii, fig. 16, *cariissima*, fig. 17, figured; DRUCE, P. Z. S. 1892.
- J. kava*, pl. xxvii, fig. 15, *walkeri*, figs. 13 & 14, South Pacific Is., DRUCE, p. 443, P. Z. S. 1892, n. spp.
- Kopelatus virgata*, Druce, = (*Hypolycaena gracilis*, Stldg.); STAUDINGER, p. 223, Deutsche e. Z. Lep., and DRUCE, p. 66, Ent. M. M. xxviii.
- Lachnocnema reutlingerii*, Benita, HOLLAND, p. 286, Ann. N. H. (6) x, n. sp.
- Læosopsis roboris*, n. var. *lusitanica*; STAUDINGER, p. 232, Deutsche e. Z. Lep. iv.
- Larinopoda sylpha*, *opaca*, figured; SMITH & KIRBY, Rhop. ex. i, African *Lycænida*, pl. xvi. *L. lara*, *sylphida*, *lybia*, *campinus*, figured; SMITH & KIRBY, Rhop. ex. ii, African *Lycænida*, xviii.

- L. sylphida*, *lybia*, p. 217, *lara*, p. 218, W. Africa, STAUDINGER, Deutsche e. Z. Lep. iv, n. spp.
- Liptena mnestra*, Möschl., = (*Teriomina dispar*, Kirby); DRUCE, Ent. M. M. xxviii, p. 65. *L. rubrica*, Druce, = (*Pseuderesia zoraida*, Smith & Kirby); DRUCE, t. c.
- Lycæna rhymnus*, *tengstrœmii*, *pretiosa*, referred to *Thecla*, their ♂ characters fully described and figured; BAKER, pp. 27–31, pl. ii, Tr. E. Soc. 1892. *L. arion*, var. *unicolor*; HORMUZAKI, Ent. Nachr. xviii, p. 1. *L. amanda*, n. var. *lydia*; KRULIKOWSKY, Ent. Nachr. xviii, p. 97. *L. arion*, n. var. *ruhli*; KRULIKOWSKY, Soc. Ent. vii, p. 1. *L. dolus*, *damon* and *rippertii*, note on; OBERTHÜR, p. ix, Bull. Soc. Ent. Fr. lxi. *L. lucifera*, note on, with figure; STAUDINGER, p. 316, pl. iii, fig. 1, Deutsche e. Z. Lep. v. *L. comyntas*, metamorphoses; BEUTENMÜLLER, p. 76, Bull. Am. Mus. iv. *L. lygdamas*, larva noticed, EDWARDS, p. 109, Canad. Ent. xxiv. *L. icarus*, number of yearly generations in E. Russia; KRULIKOWSKY, p. 370, Ent. Nachr. xviii.
- L. dama*, Malatia, p. 234, *triphysina*, Kashgar, p. 235, pl. iii, fig. 2, STAUDINGER, Deutsche e. Z. Lep. iv; *L. stormi*, Tanganyka, ROBBE, p. 132, Ann. Ent. Belg. xxxvi; *L. perpulchra*, E. Africa, HOLLAND, Ent. xxv (Supp.), p. 90; *L. saturata*, p. 137, *deliana*, p. 139, *datarica*, p. 140, *glauca*, p. 142, *quadriplaga*, p. 143, Java, SNELLEN, Tijdschr. Ent. xxxv : n. spp.
- Nacaduba vitiensis*, pl. xxvii, figs. 3 & 4, *florinda*, fig. 12, figured; DRUCE, P. Z. S. 1892.
- N. aberrans*, E. Pegu, ELWES, p. 626, pl. xlv, fig. 6, P. Z. S. 1892; *N. samoensis*, p. 437, pl. xxvii, figs. 5 & 6, Samoa Is., *novæhebridensis*, figs. 7 & 8, p. 438, *mallicollo*, fig. 18, p. 439, New Hebrides, *nebulosa*, Australasia, figs. 10 & 11, p. 440, DRUCE, P. Z. S. 1892 : n. spp.
- Narathura pryeri*, Borneo, BUTLER, p. 121, P. Z. S. 1892, n. sp.
- Papua*, n. g., for *P. lucifer*, RÖBER; RÖBER, p. 273, Exot. Schmett., Theil ii.
- Pentila subundularis*, figured; SMITH & KIRBY, Rhop. ex. ii, African *Lycenidæ*, xviii.
- P. umbra*, W. Africa, HOLLAND, p. 285, Ann. N. H. (6) x; *P. subundularis*, W. Africa, STAUDINGER, p. 215, Deutsche e. Z. Lep. iv : n. spp.
- Philiris*, n. g., for *Plebeius ilias*, Feld., RÖBER, p. 317, Tijdschr. Ent. xxxiv, and p. 273, Exot. Schmett., Theil ii.
- Pilodeudorix barbatus*, Druce, = (*Hypolycæna nobilis*, Stdgr.); STAUDINGER, p. 223, Deutsche e. Z. Lep., and DRUCE, Ent. M. M. xxviii, p. 66.
- Pithecops bassaris*, Ké Is., NICÉVILLE, p. 327, pl. h, figs. 4 & 5, J. Bomb. N. H. Soc. vii, n. sp.
- Plebeius cyaniris*, p. 315, *P. (Theclinesthes) eremicola*, p. 316, Flores, RÖBER, Tijdschr. Ent. xxxiv (figg. in xxxv), n. spp.
- Polyommatus agestis*, var. noticed; BARRETT, Ent. M. M. xxviii, p. 245. *P. dispar*, var. *rutilus*, taken in England; BAKER, p. xxx, P. E. Soc. 1892.

- P. cupreus*, Roumania, COSMOVICI, p. 255, Le Nat. 1892, n. sp.  
*Pseudaleis agrippina*, Druce, ♂ = (*tricolor*, Stand.) ; DRUCE, Ent. M. M. xxviii, p. 65.  
*P. nigra*, W. Africa, HOLLAND, p. 286, Ann. N. H. (6) x, n. sp.  
*Pseuderesia tullia*, W. Africa, STAUDINGER, p. 221, Deutsche e. Z. Lep. iv, n. sp.  
*Rapala* (sub *Deudorix*) *dyllus*, Hew., = (*Hypolycæna debilis*, Stand.) ; DRUCE, p. 185, Ent. M. M. xxviii.  
*R. abnormis*, p. 642, pl. xlv, fig. 2, *hypargyria*, p. 643, fig. 7, sub *guttata*, fig. 1, p. 644, Karen Hills, ELWES, P. Z. S. 1892, n. spp.  
*Spalgis lemolea*, Druce, = (*latimarginata*, Sharpe, and *s-signata*, Holland) ; DRUCE, Ent. M. M. xxviii, p. 66. *S. s-signata*, habits of larva, peculiar chrysalis resembling old man's head ; HOLLAND, Psyche, vi, p. 201, pl. iv.  
*Suasa suessa*, Perak, NICÉVILLE, p. 337, pl. H, figs. 8 & 9, J. Bomb. N. H. Soc. vii, n. sp.  
*Tajuria thyia*, Khasi Hills, NICÉVILLE, p. 336, pl. H, fig. 11, J. Bomb. N. H. Soc. vii, n. sp.  
*Teriomima delicatula*, figs. 5 & 6, *decipiens*, figs. 7 & 8, *serena*, figs. 11 & 12, figured ; SMITH & KIRBY, Rhop. ex. i, African *Lycenidæ*, pl. xvi.  
*T. adelgunda*, *adelgitha*, *modesta*, *cordelia*, *alberta*, figured ; SMITH & KIRBY, op. cit. ii, pl. xix.  
*T. adelgunda*, p. 219, *alberta*, p. 220, W. Africa, STAUDINGER, Deutsche e. Z. Lep. iv, n. spp.  
*Thecla rumaniae*, Roumania, COSMOVICI, p. 255, Le Nat. 1892 ; *T. leechii*, Khasi Hills, NICÉVILLE, p. 335, J. Bomb. N. H. Soc. vii : n. spp.  
*Theclinesthes*, n. subg. of *Plœbeius*, q.v. ; RÖBER, p. 316, Tijdschr. Ent. xxxiv.  
*Thestor romanovi*, n. var. *maculifera*, STAUDINGER, p. 233, Deutsche e. Z. Lep. iv.  
*Tingra lunaris*, Sierra Leone, WEYMER, p. 95, S. E. S. liii, n. sp.  
*Zisera labradus*, pl. xxvii, fig. 1, *lulu*, = (*conjungens*, Luc.), fig. 2, figured ; DRUCE, P. Z. S. 1892.

### HESPERIIDÆ.

- Many of the Philippine *Idæ* species described by Mabille are referred to other genera by SEMPER, in Reisen Philipp. ii, v, pp. 287-319.  
 Notes on N. American *Hesperiidæ* (genera) ; AARON, pp. 119 & 120, Canad. Ent. xxiv.  
*Abaratha syrichtus*, var. figured ; ELWES, p. 656, pl. xliii, fig. 2, P. Z. S. 1892.  
*Abantis bismarcki*, W. Africa, KARSCH, p. 228, Ent. Nachr. xviii, n. sp.  
*Actiopterus ladana*, fig. 4, *sindu*, fig. 3, figured, pl. xliii ; ELWES, P. Z. S. 1892.  
*Calpodès ethius*, life-history ; COCKERELL, Ent. News, iii, p. 78.

- Capila jayadeva* and *Pisola sennara*, correction as to characters and sexes of ; NICÉVILLE, p. 347, J. Bomb. N. H. Soc. vii.
- Caprona adelica*, W. Africa, KARSCH, p. 242, Ent. Nachr. xviii, n. sp.
- Carterocephalus palemon*, life-history ; FROHAWK, Ent. xxv, pp. 225-228 & 254-256.
- Carystus duris*, Mab., referred to *Lotongus* and figured ; SEMPER, p. 289, pl. xlix, fig. 7, Reisen Philipp. ii, v.
- Crossiura*, n. g., near *Capila*, p. 350, for *C. pennicillatum*, n. sp., Khasi Hills, p. 351, pl. j, figs. 1 & 2, NICÉVILLE, J. Bomb. N. H. Soc. vii.
- Cyclopides romi*, Congo ; ROBBE, p. 133, Ann. Ent. Belg. xxxvi, n. sp.
- Eriomota alexandra*, Philippine Is., SEMPER, Reisen Philipp. ii, v, p. 312, n. sp.
- Eudamus coyota*, Texas, SKINNER, p. 164, Canad. Ent. xxiv, n. sp.
- Halpe fusca*, E. India, ELWES, p. 653, pl. xliii, fig. 1, P. Z. S. 1892, n. sp.
- Hesperia gemma*, Plötz., = (*Pamphila ravola*, Godm. & Salv.); WEYMER, p. 122, S. E. Z. liii. *H. lineola*, early stages described ; HAWES, Ent. xxv, pp. 177-180.
- H. mucorea*, *sintgraffi*, W. Africa, KARSCH, p. 178, Ent. Nachr. xviii, n. spp.
- Ismene fergusonii*, S. India, NICÉVILLE, p. 345, pl. j, fig. 6, J. Bomb. N. H. Soc. vii ; *I. antigone*, Flores, RÜBER, p. 320, Tijdschr. Ent. xxxiv (fig. in xxxv), n. spp.
- Lotongus parthenope*, Weymer, sexes figured, ♂ described ; NICÉVILLE, p. 354, pl. j, figs. 4 & 5, J. Bomb. N. H. Soc. vii.
- Osmodes lux*, W. Africa, HOLLAND, p. 291, Ann. N. H. (6) x, n. sp.
- Oxypalpus annulifer*, W. Africa, HOLLAND, Ann. N. H. (6) x, p. 293, n. sp.
- Padraona procles*, Ké Is., NICÉVILLE, p. 353, pl. j, figs. 7 & 8, J. Bomb. N. H. Soc. vii, n. sp.
- Pamphila dimila*, ♀ figured ; NICÉVILLE, pl. j, fig. 9, J. Bomb. N. H. Soc. vii. *P. manitoba*, variation ; LYMAN, Canad. Ent. xxiv, p. 57.
- P. errans*, N. America, SKINNER, p. 174, Ent. News, iii (metamorphoses DYAR, t. c., p. 175); *P. carolina*, N. America, SKINNER, p. 222, t. c. : n. spp.
- Pardaleodes œdipus*, Cr., n. var. *diluta* ; ROBBE, p. 134, Ann. Ent. Belg. xxxvi.
- P. xanthopleus*, p. 289, *astrape*, *xanthioides*, p. 290, W. Africa, HOLLAND, Ann. N. H. (6) x, n. spp.
- Plastingia viburnia* (Stdgr.), *cuneiformis*, pl. xlix, fig. 11, Philippines, SEMPER, p. 314, Reisen Philipp. ii, v, n. spp.
- Procampa*, n. g., for *P. rara*, n. sp., W. Africa ; HOLLAND, p. 294, Ann. N. H. (6) x.
- Sarangesa*, Moore, = (*Erites*, *Hyda*, and *Sape*, Mab.); HOLLAND, p. 288, Ann. N. H. (6) x.
- S. motosioides*, W. Africa, HOLLAND, p. 288, Ann. N. H. (6) x, n. sp.
- Satarupa corona* (Stdgr.), Philippines, SEMPER, p. 306, Reisen Philipp. ii, v, n. sp.
- Suastus albinus*, pl. xlix, fig. 8, p. 299, *migreus*, fig. 9, p. 300, Philippines, SEMPER, Reisen Philipp. ii, v, n. spp.

- Tagiades princeps* (Stdgr.), Philippines, SEMPER, p. 307, pl. xlix, fig. Reisen Philipp. ii, v, n. spp.  
*Tapena igna*, Philippines, SEMPER, p. 316, Reisen Philipp. ii, v, n. sp.  
*Teniorhinus watsoni*, Gaboon, HOLLAND, p. 292, Ann. N. H. (6) x, n. 1  
*Tricoemeia*, n. g., for *T. sublivescens*, n. sp., W. Africa, HOLLAND, p. 2  
 Ann. N. H. (6) x.

## HETEROCERA.

- Catalogue of *Lepidoptera Heterocera*; vol. i, *Sphinges, Bombyces*; KII (496).  
 The classification, phylogeny, neuration, &c., of *Heterocera* discuss HAMPSON, Moths of India, i, pp. 1-12.  
 707 species of Amurland *Heterocera* of the groups *Sphinges, Bomby Noctue*, catalogued and discussed seriatim; STAUDINGER in Roma: Mem. vi, pp. 219-658.  
 Notes on many species, with named varieties, of *Heterocera* from Siberia; STAUDINGER, Deutsche e. Z. Lep. v, pp. 342-393.  
 Brief notes on some of the early stages of numerous Australian *Heterocera* by the late HENRY EDWARDS; BEUTENMÜLLER, Bull. Mus. iv, pp. 71-74.  
 List of 12 genera established by Philippi, and of the genera of w they are synonyms; REED, pp. 68 & 69, Act. Soc. Chili, i.  
 Experiments as to colour variation in Lepidopterous larvæ, and p and in cocoons; BATESON (40, 41), GOULD (354), POULTON (702 Walker's types and their labelling noticed; GROTE, p. 189, Canad. xxiv.

## SPHINGIDÆ.

- [*Cf. AURIVILLIUS* (24), AUSTAUT (29), COSMOVICI (191), GRAESER (KARSCH (460, 461), LUCAS (568), MISKIN (611, 612), STAUDI (779), SWINHOE (908).]  
 Revision of the Australian *Sphingidæ*; MISKIN (611, 612).  
 Synonymy of the species described by Lucas in "Queenalander, MISKIN at end of "Further note" (612).  
 Brief note on phylogeny; GROTE, p. 17, Canad. Ent. xxiv.  
*Abrisa*, n. n. for *Microlophia*, Feld.; KIRBY, p. 641, Cat. Lep. Het.  
*Acanthosphinx*, n. g. for *Ambulyx gussfeldtii*, Dew., with n. var. ; AURIVILLIUS, Ent. Tidskr. xiii, pp. 181 & 182.  
*Acherontia atropos*, stridulation of; ROTH, p. 250, Ent. Tidskr. xiii.  
*Acosmeryx mixtura*, figured, pl. i, fig. 7; SWINHOE, Cat. Lep. Oxfo  
*Ambulyx wildei*, Queensland, MISKIN, P. R. Soc. Queensl. viii, pt. n. sp.  
*Anceryx fasciata*, larva described; COCKERELL, Ent. xxiv, p. 19.  
*Cherocampa rosetta*, p. 16, *insularis*, p. 18, Ceram, *amara*, Mysol, pl. i, fig. 9, SWINHOE, Cat. Lep. Oxford; *C. cleopatra*, *cloacina*, *pallida*, Queensland, MISKIN, P. R. Soc. Queensl. viii, pt. 3, pi 18, sep. copy): n. spp.

- Deilephila japonica*, var. ? *suifuna*, figured, pl. iv, fig. 2, described, p. 228 ; STAUDINGER, Romanoff Mem. vi.
- D. prozima*, Japan, AUSTAUT, p. 69, Le Nat. 1892 ; *D. euphorbioides*, Japan, SWINHOE, p. 22, Cat. Lep. Oxford : n. spp.
- Dolbina exacta*, Amurland, STAUDINGER, p. 222, pl. iv, fig. 1, Romanoff Mem. vi, n. sp.
- Gargantua*, n. n. for *Lintneria*, Butl. ; KIRBY, p. 692, Cat. Lep. Het. i.
- Hamaris rubra*, N. India, HAMPSON, Moths of India, i, p. 120 ; *H. janus*, Queensland, MISKIN, P. R. Soc. Queensl. viii, pt. 3, p. ? : n. spp.
- Kentochrysalis* (sub *Sphinx*) *streckeri*, Stgr., = (*dauidis*, Oberth.) ; STAUDINGER, p. 220, Romanoff Mem. vi.
- Lophura hyas*, figured, pl. i, fig. 2, Romanoff Mem. vi.
- Macrosila severina*, Cape York, MISKIN, P. R. Soc. Queensl. viii, pt. 3, p. ? n. sp.
- Macroglossa nigra*, Roumania, COSMOVICI, p. 280, Le Nat. 1892 ; *M. semifasciata*, Pegu, HAMPSON, Moths of India, i, p. 115 ; *M. limata*, Java, pl. i, fig. 1, p. 4, *kanita*, fig. 2, Sumatra, *labrosa*, Bouru, p. 5, *inuitata*, Dorey, p. 6, SWINHOE, Cat. Lep. Oxford : n. spp.
- Nephele pachyderma*, W. Africa, KARSCH, p. 180, Ent. Nachr. xviii, n. sp.
- Ocyton radiata*, W. Africa, KARSCH, p. 116, Ent. Nachr. xviii, n. sp.
- Pachylia ficus*, notes on larva ; COCKERELL, Ent. News, iii, p. 4.
- Panacra variolosa*, figured, pl. i, fig. 4 ; SWINHOE, Cat. Lep. Oxford.
- P. turneri*, Lucas, redescribed ; MISKIN, P. R. Soc. Queensl. viii, pt. 3, p. ?
- P. frena*, Silhet, pl. i, fig. 5, p. 48, *mira*, Cape York, p. 13, pl. i, fig. 6, SWINHOE, Cat. Lep. Oxford, n. spp.
- Protoparce cæstri*, Blanch., = (*Sphinx eurylochus*, Phil.) ; REED, p. 68, Act. Soc. Chili, i.
- P. minimus*, Queensland, MISKIN, P. R. Soc. Queensl. viii, pt. 3, p. ? n. sp.
- Pseudosphinx grisea*, p. 104, *concolor*, p. 106, India, HAMPSON, Moths of India, i, n. spp.
- Pterogon kuldjaensis*, Centr. Asia, GRAESER, p. 299, Berl. Ent. Zeit. xxxvii, n. sp.
- Smerinthus populi*, anatomy of hermaphrodite ; TETENS (918). *S. tilia* and *populi*, note on markings of larvæ ; GOULD, pp. 236-243, Tr. Ent. Soc. 1892.
- S. heynei*, Japan, AUSTAUT, p. 68, Le Nat. 1892, n. sp.
- Sphinx eremophila*, redescribed ; LUCAS, p. 277, P. Linn. Soc. N.S.W. (2) vi.
- S. marmorata*, Queensland, LUCAS, P. Linn. Soc. N.S.W. (2) vi, p. 278, n. sp.

## ÆGERIIDÆ.

[Cf. DRUCE (226), HAMPSON (384), KELLICOTT (476, 477), MISKIN (613), STAUDINGER (886), SWINHOE (908).]



- Adiroa*, n. g. for *A. auricollum*, n. sp.,  
Moths of India, i.
- Egeria corni*, habits and characters, K  
xxiv, and metamorphoses, *Ins. Life*  
on ; KELLICOTT, *Canad. Ent.* xxiv, p.
- E. penalis*, Sarawak, SWINHOE, p. 36,  
*stigma*, KELLICOTT, p. 211, *Canad. E.*
- E. armata*, *mardia*, Mexico, DRU  
n. spp.
- Albana modesta*, Ohio, KELLICOTT, p. 46,  
*Anthrenoptera*, n. g., p. 35, for *Sphacia*  
fig. 11 ; SWINHOE, *Cat. Lep.* Oxford.
- Aechistophleps*, n. g. for *A. lampropoda*, p  
India ; HAMPSON, *Moths of India*, i.
- Ceratocorema*, n. g. for *C. postcristatum*, n.  
India, i, p. 200.
- Ichneumonoptera*, n. g. for *I. auripes*, |  
*flaripalpus*, *ignifera*, p. 195, n. spp.,  
India, i.
- Macrotarsipus*, n. g. for *M. albipunctus*, n  
Moths of India, i.
- Melittia ceto*, notes on ; SMITH, p. 129, *Ca*  
*M. grandis*, Sikkim, HAMPSON, *Moths of*  
N. China, SWINHOE, p. 38, *Cat.*  
Queensland, MISKIN, P. R. Soc. (
- beckeri*, Mexico, DRUCE, p. 276, *Ann.*  
*Sciapteron ferridum*, varr. described ; STA  
Lep. iv.
- S. splendidum*, Taurus, p. 242, *S. ? dispa*  
*Deutsche e. Z. Lep.* iv ; *S. flamma*  
*metallicum*, *cupreivitta*, *tenuimarginat*  
Moths of India, i : n. spp.
- Sesia proximata*, Amasia, p. 244, *regule*  
*Deutsche e. Z. Lep.* iv ; *S. qu*  
*xanthosticta*, p. 197, E. India, HAMP
- Sphexoptera*, n. g., p. 189, type *repand*  
n. sp., Kashmir, p. 190 : HAMPSON, |
- Trichocerota*, n. g. for *T. ruficincta*, Peg  
India, i.
- Trilochana ignicnuda*, Burma, HAMPSON,  
*Trochilium apiforme*, n. var. *caflischii* ;  
Ent. Ges. viii.
- T. ommatiforme*, *ignicolle*, India, HAMP  
*T. cupreifascia*, Queensland, MISKIN,  
p. ? : n. spp.

## CASTNIIDÆ.

[Cf. LOWER (566), SWINHÖE (908).]

*Synemon collecta*, p. 151, pl. vii, fig. 16, *adelaida*, fig. 10, p. 154, Australia, SWINHÖE, Cat. Lep. Oxford; *S. pyrrhoptera*, Australia, LOWER, p. 13, Tr. R. Soc. S. Austr. xvi : n. spp.

## BOMBYCES.\*

[Cf. ALPHERAKY (779), AURIVILLIUS (24), BUTLER (141, 146), CARPENTIER (160), CHRISTOPH (175), DISTANT (210, 216), DOGNIN (220), DRUCE (226), DYAR (238, 239, 240), FENK (279), GRAESER (356, 357), HEYLAERTS (403), HOLLAND (408, 409), HONRATH (413), KARSCH (460, 464), KIRBY (497), LOWER (565, 566), LUCAS (568, 569), MABILLE (571, 572), MABILLE & VUILLOT (573), MOORE (623), NEUMOEGEN (633, 634), OBERTHUR (650), PACKARD (665, 666), POJUJADE (702), PÜNGELER (706), RÖBER (767), SCHAUS (798, 799), SLOSSON (854, 855), SONTTHONNAX (878), STANDFUSS (779), STAUDINGER (779, 886, 890, 891), SWINHÖE (908), VUILLOT (978, 980), WEYMER (1003).]

The following new or revived names of families are recognized in the first volume of Hampson's Moths of India, viz., *Brahmaïdæ*, *Eupterotidæ*, *Syntomididæ*, *Arbelidæ*, *Pterothysanidæ*.

KIRBY, in his catalogue, makes use of the names *Cylopodidæ*, *Cymbidæ*, and *Pinaridæ*, to represent families of *Bombyces*.

*Achelura*, n. n. for *Chelura*, Hope; KIRBY, p. 56, Cat. Lep. Het. i.

*Aclytia petra*, Peru, p. 276, *hecale*, p. 277, Brazil, SCHAUS, P. Z. S. 1892 (figured, SCHAUS, American Lep. pl. i), n. spp.

*Adelocephala invalida*, Brazil, SCHAUS, p. 289, P. Z. S. 1891 (figured, SCHAUS, pl. iii, American Lep.); *A. columbia*, Columbia, SCHAUS, p. 21, pl. iii, fig. 13, American Lep. : n. spp.

*Adullia lunifera*, pl. vi, fig. 3, *innotata*, fig. 1, *xanthomela*, fig. 8, *divisa*, fig. 14, figured; SWINHÖE, Cat. Lep. Oxford.

*A. bollora*, Borneo, SWINHÖE, p. 186, pl. vi, fig. 2, Cat. Lep. Oxford, n. sp.

*Ægocera* and *Hecutesia*, stridulation in; HAMPSON, pp. 188 & 189, P. Z. S. 1892. *Æ. triphanosides*, synonymical note; WEYMER, p. 124, S. E. Z. liii.

*Æ. confuens*, Zanzibar, WEYMER, p. 100, S. E. Z. liii, n. sp.

*Emilia*, n. n. for *Ameles*, Walk.; KIRBY, p. 218, Cat. Lep. Het. i.

*Agarea minuta*, Brazil, SCHAUS, p. 288, P. Z. S. 1892, n. sp.

*Agaristidæ*, definition of; AURIVILLIUS, Ent. Tidskr. xiii, p. 183.

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\* Owing to increasing divergence of opinion as to the limits and positions of the families hitherto placed between the Sphingid and the Noctuid Moths, and to the large number of new genera that have been established of late years, we are compelled to unite the groups under the comprehensive term *Bombyces*.

- Agarista albamedia*, *simplex*, p. 301, *tropica*, p. 302, *cæruleotincta*, p. 30  
Queensland, LUCAS, P. Linn. Soc. N.S.W. (2) vi, n. spp.
- Aglia tau*, life-history; ANDERSSON, Ent. Tidskr. xiii, pp. 93-96.
- Agnidra carnea*, Borneo, BUTLER, p. 125, pl. vi, fig. 3, P. Z. S. 1892, n.
- Agonis lutensis*, Ternate, SWINHOE, p. 136, Cat. Lep. Oxford, n. sp.
- Albara reversaria*, figured, pl. vii, fig. 9; SWINHOE, Cat. Lep. Oxford
- Allodonta? leucodera*, Amurland, STAUDINGER, p. 357, Romanoff M.  
vi, n. sp.
- Aloa gangara*, pl. iv, fig. 2, *corsima*, fig. 1, SWINHOE, p. 171, Cat. L.  
Oxford, n. spp.
- Allophogaster*, n. g., *Phaudinae*, for *A. rubribasis*, Naga Hills, n. sp., HAM-  
PSON, p. 287, Moths of India, i.
- Alpenus trifasciata*, E. Africa, HOLLAND, Ent. xxv (Supp.), p. 92, n. sp.
- Allypia crescens*, Wlk., = (*grutei*, Bdv.) ; SMITH, p. 133, Canad. Ent. x
- Amazia hebe*, p. 278, *pyga*, p. 279, Brazil, SCHAUS, P. Z. S. 1892 (figu-  
SCHAUS, American Lep. pl. i) : n. spp.
- Ameles byblis*, Brazil, SCHAUS, p. 279, P. Z. S. 1892 (figured, SCH-  
American Lep. pl. ii, fig. 2), n. sp.
- Amerila nivaria*, p. 105, *phædra*, p. 106, E. Africa, WEYMER, S. E. Z.  
n. spp.
- Annalo thraikilli*, Mexico, SCHAUS, p. 280, P. Z. S. 1892, n. sp.
- Amydona sericea*, Peru, SCHAUS, p. 324, P. Z. S. 1892, n. sp.
- Anaphe* : characters and position noticed; BUTLER, p. 398, Ann. N. H.  
x. *A. carteri*, Walsingh., = (*parva*, Aur.); AURIVILLIUS, p.  
Ent. Tidskr. xiii.
- A. aurea*, Madagascar, BUTLER, p. 398, Ann. N. H. (6) x, n. sp.
- Anazidia*, n. g., *Limacodidae*, for *A. luctea*, n. sp., W. Australia; SWIN-  
p. 231, Cat. Lep. Oxford.
- Anisota stigma*, metamorphoses; MARLATT, pp. 111 & 112, Tr. Ka  
Ac. xi, figs. *A. stigma*, p. 65, *senatoria*, p. 66, metamorpho-  
BEUTENMÜLLER, Bull. Am. Mus. iv.
- Antarctia rubra*, var., = (*walsinghami*, Butl.); SMITH, p. 135, Canad.  
xxiv.
- Antheræa anthina*, Cameroons, KARSCH, p. 353, Ent. Nachr. xviii  
*knyvetti*, Sikkim, HAMPSON, Moths of India, i, p. 19; *A. pul-*  
*fasciata*, p. 448, *olivescens*, *ochripicta*, p. 449, Bombay, *versu*  
Bengal, *hartii*, N. China, p. 450, *borneensis*, p. 451, *ridlyi*, p.  
Borneo, *surakarta*, Java, p. 453, MOORE, Ann. N. H. (6) ix  
*alephostra*, Waigiou, SWINHOE, p. 252, Cat. Lep. Oxford; *A. lor-*  
Queensland, LUCAS, p. 292, P. Linn. Soc. N.S.W. (2) vi : n. spp
- Antipha biplagata*, Java, HEYLAERTS, p. 10, Ann. Ent. Belg. xxxvi, :  
Aon, n. g., *Cossidae*, for *A. noctuiformis*, n. sp., Texas; NEUMOEGEN,  
News, iii, p. 258.
- Aræocera*, n. g., *Zygenidae*, for *A. cyanescens*, *posthyalina*, n. spp., I  
HAMPSON, Moths of India, i, p. 244.
- Aræogyia*, n. g., *Limacodidae*, p. 394, for *A. spatulata*, *castanea*, n.  
India, p. 395; HAMPSON, Moths of India, i.

- Archylus mexicana*, Jalapa, p. 288, *vesta*, Brazil, p. 289, SCHAUS, P. Z. S. 1892, n. spp.
- Arctia fortunata* and *glauca*, notes on, with figg. ; STAUDINGER, pp. 250 & 251, pl. iii, figs. 3 & 5, Deutsche s. Z. Lep. iv. *A. mongolica*, figured, pl. i, fig. 6, Romanoff Mem. vi. *A. nais*; *rhoda* and *ochreatea*, Butl., and *radians*, Wlk., are probably varr. of this: *A. phyllira*, = (*dodgei*, Butl.); SMITH, pp. 134 & 135, Canad. Ent. xxiv. *A. caju*, var. ; LADDIMAN, Ent. xxv, p. 1.
- A. flava*, n. var. *campestris* ; GRAESER, p. 213, Berl. Ent. Zeit. xxxvii.
- A. turbans*, Irkutsk, CHRISTOPH, p. 460, Hor. Ent. Ross. xxvi ; *A. minea*, N. America, SLOSSON, p. 257, Ent. News, iii : n. spp.
- Ardices garida*, Australia, SWINHOE, p. 179, Cat. Lep. Oxford, n. sp.
- Ardonea metallica*, Peru, SCHAUS, p. 284, P. Z. S. 1892 (figured, pl. ii, fig. 8 ; SCHAUS, American Lep.), n. sp.
- Areas sparsalis*, *conflictalis*, *rudis*, Wlk., figured ; SWINHOE, pl. iv, figg. 4-6, Cat. Lep. Oxford.
- Argina pulchra*, Philippinae, SWINHOE, p. 117, pl. iii, fig. 5, Cat. Lep. Oxford, n. sp.
- Arguda rectilinea*, Burma, HAMPSON, p. 414, Moths of India, i, n. sp.
- Argyrooides magon*, Brazil, SCHAUS, p. 276, P. Z. S. 1892, n. sp.
- Aroa atrella*, p. 439, *aurantifascia*, p. 440, India, HAMPSON, Moths of India, i ; *A. exoleta*, Queensland, SWINHOE, p. 197, pl. vi, fig. 18, Cat. Lep. Oxford, n. spp.
- Arctos*, n. g., *Bombycidae*, p. 325, for *A. striata*, n. sp., Brazil, p. 326 ; SCHAUS, P. Z. S. 1892.
- Artace anula*, *meridionalis*, Brazil, SCHAUS, p. 319, P. Z. S. 1892, n. spp.
- Artaxa chrysophæa*, n. var. *iobrota* ; LUCAS, p. 251, P. Linn. Soc. N.S.W. (2) vii. *A. signiplaga*, figured ; SWINHOE, pl. vi, fig. 9, Cat. Lep. Oxford. *A. charmetanti*, figured ; MABILLE & VUILLOT, pl. xi, fig. 2, Nov. Lep.
- Artaxa albinotata*, p. 9, *bicolor*, p. 10, Sumatra, HEYLAERTS, Ann. Ent. Belg. xxxvi ; *A. singapura*, Singapore, p. 189, pl. vi, fig. 19, *enunciativa*, Philippinae, p. 190, SWINHOE, Cat. Lep. Oxford ; *A. lucifuga*, Brisbane, LUCAS, p. 250, P. Linn. Soc. N.S.W. (2) vii : n. spp.
- Artoma sieversi*, Mongolia, ALPHÉRAKY, p. 5, pl. i, fig. 4, Romanoff Mem. vi, n. sp.
- Asterocopus nodosus*, Tasmania, SWINHOE, p. 299, pl. viii, fig. 13, Cat. Lep. Oxford, n. sp.
- Asura* ? *bisecta*, Queensland, LUCAS, P. Linn. Soc. N.S.W. (2) vi, p. 279, n. sp.
- Atasca*, n. g. for pt. of *Nyctemera*, p. 139, *A. simplex* and *quadriplaga*, Wlk., figured, pl. v, figs. 13 & 9 ; SWINHOE, Cat. Lep. Oxford.
- Atossa palæarctica*, Stldr., systematic position ; SNELLEN, p. 11, Tijdschr. Ent. xxxv.
- Atacus atlas* and allies, synonymy ; KIRBY, Ent. xxv, pp. 186-188.

- Automeris macareis, rubicunda*, Brazil, *nopalisin*, Mexico, p. 290, *tamphilus*, Brazil, p. 291, SCHAUS, P. Z. S. 1892 (*A. macareis, rubicunda*, figured, pl. iii, SCHAUS, American Lep.); *A. quadridentata*, Brazil KIRBY, p. 175, pl. xi, fig. 3, Ann. N. H. (6) x : n. spp.
- Automolidinae*, = (*Hexaneurida*, Wallengr.), composition of ; AURIVILLIUS p. 189, Ent. Tidokr. xiii.
- Automolis elisea*, Brazil, SCHAUS, p. 277, P. Z. S. 1892 (figured and referred to *Euplesia*, SCHAUS, p. 7, pl. i, fig. 21, American Lep.) n. sp.
- Asygophleps*, n. g., *Cossida*, type *scalaris*, Fab. ; HAMPSON, p. 309, Moth of India, i.
- Balacra elegans*, p. 190, *pulchra*, B. ? *croceipes*, p. 200, Cameroon AURIVILLIUS, Ent. Tidokr. xiii, n. spp.
- Barsine hypoprepoides*, fig. 22, *placens*, fig. 15, figured, pl. iii, SWINHOE Cat. Lep. Oxford.
- B. lucibilis*, Borneo, pl. iii, fig. 6, p. 107, *intrita*, Ceram, fig. 23, p. 108 SWINHOE, Cat. Lep. Oxford, n. spp.
- Bharetta flammans*, Manipur, HAMPSON, p. 416, Moths of India, i, n. sp.
- Bijugis* sp., larva and female noticed ; PÜNGBLER, p. 139, Deutsche e. Lep. v.
- Birithama obliqua*, Wlk., figured, pl. viii, fig. 9 ; SWINHOE, Cat. Lep. Oxford.
- B. bilineata*, Philippines, SWINHOE, p. 240, Cat. Lep. Oxford, n. sp.
- Bixone dubenskii*, China, ALPHÉRAKY, p. 11, pl. i, fig. 5, Romanoff Mem. vi, n. sp.
- Blera causia*, p. 332, *bianca, apella, sida*, Brazil, p. 333, SCHAUS, P. Z. S. 1892, n. spp.
- Bombyx trifolii*, n. var. *bathseba* ; STAUDINGER, p. 260, Deutsche e. Z. Lep. iv. *B. quercus* and *callunæ*, effects of temperature in producing variation ; MERRIFIELD, p. 38, Tr. E. Soc. 1892. *B. mori*, existence of clinging papillæ in abdominal legs of larva ; VERNON, Zool. Anz. xv, p. 279 : embryology ; HENKING (396) : food-plants ; HÜBNER (442).
- B. salomonis*, Beyrout, STAUDINGER, p. 259, Deutsche e. Z. Lep. iv ; *rueckbeili*, Central Asia, GRAESER, p. 301, Berl. Ent. Zeit. xxxv
- B. (Lebeda) rotundata*, Java, HEYLAERTS, Ann. Ent. Belg. xxx p. 8 : n. spp.
- Borocera madagascariensis*, notes on ; SIKORA, p. 179, Soc. Ent. vi.
- B. esteban*, Lojn, DOGNIN, p. 33, Le Nat. 1892, n. sp.
- Brachartona catowantha*, Tenasserim, HAMPSON, p. 233, Moths of India n. sp.
- Bremeria*, n. g., near *Rhaphidognatha*, for *B. manza*, n. sp., China, p. fig. 3 ; ALPHÉRAKY, p. 7, Romanoff Mem. vi.
- Brycea peruviana*, Peru, SCHAUS, p. 284, P. Z. S. 1892 (figured, pl. fig. 16, SCHAUS, American Lep.), n. sp.
- Bunæa mitfordi*, Sierra Leone, KIRBY, p. 173, pl. xi, fig. 1, Ann. N. H. x, n. sp.

- Caligula castanea*, Japan, SWINHOE, p. 249, Cat. Lep. Oxford, n. sp.
- Callartona*, n. g., *Zygænidæ*, type *purpurascens*, Hmpn.; HAMPSON, p. 233, Moths of India, i.
- Calligenia pilcheri*, Rockhampton, LUCAS, P. Linn. Soc. N.S.W. (2) vi, p. 279, n. sp.
- Callimorpha suffusa*, metamorphoses; MARLATT, p. 113, figg., Tr. Kansas Ac. xi. *C. lecontei*, localisation of variation; MASON, Ent. News, iii, p. 52.
- Callitomis multifasciata*, India, HAMPSON, Moths of India, i, p. 225, n. sp.
- Callisyygæna auricincta*, Nilgiri Hills, SWINHOE, p. 62, Cat. Lep. Oxford, n. sp.
- Calybia*, n. n. for *Phryne*, Grote; KIRBY, p. 446, Cat. Lep. Het. i.
- Campptochilus*, n. g., *Drepanulidæ*, type *reticulatum*, Moore; HAMPSON, p. 351, Moths of India, i.
- Caprima gelida*, fig. 3, *C. mutilata*, Wlk. (sub *Soritia*), fig. 15, figured, pl. ii; SWINHOE, Cat. Lep. Oxford.
- Carales celer*, Brazil, SCHAUS, p. 282, P. Z. S. 1892, n. sp.
- Cascera inconcisa*, Mysol, SWINHOE, p. 299, pl. vii, fig. 6, Cat. Lep. Oxford, n. sp.
- Ceratonema*, n. g., *Limacodidæ*, p. 393, type *retractatum*, Wlk., with *C. albifusum*, *fasciatum*, n. spp., India, p. 394; HAMPSON, Moths of India, i.
- Cerura*: list of the N. American species; DYAR, Psyche, vi, p. 290: mode of emergence from cocoon; CHAPMAN, Ent. xxv, pp. 302-304.
- C. meridionalis*, Texas, DYAR, Psyche, vi, p. 291, n. sp.
- Chalcocelis*, n. g., *Limacodidæ*, type *fumifera*, Swinh.; HAMPSON, p. 392, Moths of India, i.
- Chalcosia fragilis*, Wlk., figured, pl. ii, fig. 7; SWINHOE, Cat. Lep. Oxford.
- C. griseifusa*, Pegu, HAMPSON, p. 264, Moths of India, i; *C. paviei*, Laos, POUJADE, p. 268, pl. xi, fig. 5, N. Arch. Mus. Paris (3) iii; *C. indistincta*, Borneo, SWINHOE, p. 74, Cat. Lep. Oxford: n. spp.
- Chaliinæ*, n. subfam. of *Psychidæ*; HAMPSON, Moths of India, i, p. 300.
- Chalioides*, n. g., p. 227, for *C. vitrea*, n. sp., Ceylon, p. 228; SWINHOE, Cat. Lep. Oxford.
- Charagia pomalis*, Queensland, pl. viii, fig. 3, *dulcis*, Swan River, SWINHOE, p. 288, Cat. Lep. Oxford, n. spp.
- Charidea inachia*, Brazil, SCHAUS, p. 277, P. Z. S. 1892 (figured and referred to *Cyanopepla*, SCHAUS, American Lep. i, p. 6, pl. i, fig. 19), n. sp.
- Chelonia mirifica*, Ta-Tsien-Lou, OBERTHUR, p. 8, pl. i, fig. 7, Études d'Ent. xvi, n. sp.
- Chenuala*, n. g., *Liparidæ*, for *C. rufa*, n. sp., Queensland; SWINHOE, p. 212, Cat. Lep. Oxford.
- Chondrostega pastrana*, n. var. *palastrana*; STAUDINGER, p. 257, Deutsche e. Z. Lep. iv.
- C. fasciana*, Jerusalem, STAUDINGER, Deutsche e. Z. Lep. iv, p. 258,  
n. sp.

- Chrysartona*, n. g., *Zyganida*, for *Procris* st. Cat. Lep. Oxford.
- C. refulgens*, Burma, HAMPSON, p. 232, Moth.
- Chrysopsyche mirifica*, cocoon figured; HOI p. 216, Psyche, vi.
- Cispia flavipes*, Sikkim, HAMPSON, p. 493, Mo.
- Cisthene petrovna*, Brazil, SCHAUS, p. 283, fig. 4, SCHAUS, American Lep.), n. sp.
- Citheronia vogleri*, = (*Eacles leona*, Druce), fi American Lep.
- Clelea plumbeola*, Burma, HAMPSON, p. 240, *Clisiocampa constricta*, var. = (*strigosa*, Stre vi. *C. erosa*, metamorphoses; DYAR, t. *Cochliotheca*: habita, systematic position; P v, p. 133.
- Codiosoma*, n. n. for *Kodiosoma*, Strotch; K.
- Caelodasys tonac*, p. 330, *pegasis*, p. 331, B n. spp.
- Collita leucanioides*, Wlk. (sub *Lithosia*), fig. Cat. Lep. Oxford.
- Comacla simplex*, Wlk., = (*murina*, Wlk., and SMITH, p. 134, Canad. Ent. xxiv.
- Contheyla melanosticta*, India, HAMPSON, p. 3
- Corcura torta*, fig. 10, *discalis*, fig. 12, figured Oxford.
- C. mysolica*, Mysol, SWINHOE, p. 119, pl. ii n. sp.
- Corma maculata*, Burma, HAMPSON, p. 268, *Cosmosoma harpulyce*, Petropolis, SCHAUS, p. SCHAUS, American Lep. pl. i, fig. 11), n.
- Cossa vagivitta*, Wlk. (sub *Lithosia*), figured, Lep. Oxford.
- Cossida* and *Hepialida*, wing-neuration disc Zool. liii, pp. 635-639.
- Cossula notodontoides*, *præclara*, Brazil, SCH n. spp.
- Cossulinus*, n. n. for *Cossulus*, Stdgr.; KIRBY, *Cossus ussuriensis*, E. Siberia, GRAESER, p. 2
- C. nigromaculatus*, p. 305, *parvipunctus* HAMPSON, Moths of India, i; *C. chloratu* pl. viii, fig. 8, Cat. Lep. Oxford; *C. pari* p. 327, P. Z. S. 1892 : n. spp.
- Costria abnoba*, Brazil; SCHAUS, p. 327, P. Z.
- Cosuma marginata*, E. Africa, HOLLAND, Ent.
- Cothocida nigrifera*, Wlk., referred to *Croco* Ent. xxiv.
- Crambidia pallida*, egg and young larva; DY

- Crambomorpha auraria*, Loja, DOGNIN, p. 169, Le Nat. 1892, n. sp.  
*Crinocraspeda*, n. g., *Lasiocampidæ*, type '*torrida*', Moore; HAMPSON, p. 420, Moths of India, i.  
*Crocomela*, n. n. for *Darna*, Wlk.; KIRBY, p. 405, Cat. Lep. Het. i.  
*Orothama decorata*, Transvaal, DISTANT, p. 237, pl. ii, fig. 6, Naturalist Transvaal, n. sp.  
*Ctenucha azteca*, Mexico, SCHAUS, p. 278, P. Z. S. 1892, n. sp.  
*Cyclosia ficta*, Wlk., referred to *Milleria*, p. 70, and figured, pl. ii, fig. 4; SWINHOE, Cat. Lep. Oxford.  
*C. chuna*, Menado, p. 68, *enodis*, Sumatra, pl. ii, fig. 2, *chartacea*, Manilla, fig. 3, p. 69, SWINHOE, Cat. Lep. Oxford, n. spp.  
*Cyllopodidæ*, n. n. for a part of the family *Chrysaugidæ*; KIRBY, Cat. Lep. Het. i, p. 398.  
*Cyllopoda (Flavinia) dubia, durno, juneira, quicha, chibcha*, Schaus, figured; SCHAUS, American Lep. pl. ii.  
*Cyphanta chortochlora*, Himalaya, HAMPSON, Moths of India, p. 175, n. sp.  
*Dactylorhyncha*, n. g., *Liparidæ*, type *pallida*, Hampson.; HAMPSON, p. 470, Moths of India, i.  
*Dalecera tijucana*, Brazil, SCHAUS, p. 322, P. Z. S. 1892, n. sp.  
*Dalaca prytanes*, p. 329, *munnea*, *oreas*, Brazil, *terea*, Mexico, p. 330, SCHAUS, P. Z. S. 1892, n. spp.  
*Damata microsticta*, E. India, SWINHOE, p. 302, Cat. Lep. Oxford; *D. nigrosticta*, E. India, HAMPSON, Moths of India, i, p. 157, n. spp.  
*Damias angustifasciata*, Ké Is., RÖBER, p. 324, Tijdschr. Ent. xxxiv (fig. in xxxv), n. sp.  
*Danina banksia*, larva noticed; ASH, Ent. M. M. xxviii, p. 232, woodcut.  
*Darala complens*, p. 209, *uniformis, minuta*, p. 210, Australia; SWINHOE, Cat. Lep. Oxford; *D. ochroptera*, Centr. Australia, LOWER, p. 14, Tr. R. Soc. S. Austr. xvi; *D. expansa, magnifica*, p. 286, *asciicens*, p. 287, *linearis*, p. 289, *succinea, scortea*, p. 290, *rubriscripta, rosea*, p. 291, Australia, LUCAS, P. Linn. Soc. N.S.W. (2) vi : n. spp.  
*Darna metaleuca*, Wlk. (sub *Artaza*), pl. vii, fig. 14, *basalis*, Wlk. (sub *Susica*), pl. viii, fig. 11, figured; SWINHOE, Cat. Lep. Oxford.  
*D. inca*, Peru, SCHAUS, p. 286, P. Z. S. 1892 (figured, SCHAUS, American Lep. pl. ii, fig. 10), n. sp.  
*Dasychira chloroptera*, India, HAMPSON, p. 450, Moths of India, i; *D. tristis*, Sumatra, p. 12, *D. (Mardara) preangerensis*, Java, p. 13, HEYLAERTS, Ann. Ent. Belg. xxxvi : n. spp.  
*Dasylophia puntagorda*, Florida, SLOSSON, p. 139, Canad. Ent. xxiv, n. sp.  
*Datana major*, metamorphoses; BEUTENMULLER, p. 76, Bull. Am. Mus. iv.  
*Demas coryli*, habits noticed; STILL, Ent. M. M. xxviii, p. 148.  
*Dendrophleps*, n. g., *Liparidæ*, for *D. semihyalina*, n. sp., Khasi Hills; HAMPSON, p. 491, Moths of India, i.  
*Diabasis nilgirensis*, n. n. for *Bijugis sikkimensis*, Heyl.; HAMPSON, p. 303, Moths of India, i.



*Dicranura vinula*, escape from cocoon by meæ  
LATTER, Tr. E. Soc. 1892, p. 287.

*Digama burmana*, Myingan, HAMPSON, p. 505

*Dirphia aculea*, Brazil, VUILLOT, p. exci, Bull

*Dixoa*, n. g., *Thyridida*, type *albatalis*, Swinh  
of India, i.

*Dolecta juturna*, *macrochir*, *invenusta*, Brazi  
1892, n. spp.

*Dolgoma nebulosa*, Wlk. (sub *Lithosia*), figure  
Cat. Lep. Oxford.

*Dreata pomona*, E. Africa, WEYMER, p. 113, S

*Drepana curvaria*, Wlk. (sub *Canucha*), pl. vii.  
figured; SWINHOE, Cat. Lep. Oxford.

*D. grisearia*, pl. iv, fig. 7, *muscula*, pl. xii, fig.  
p. 335, Romanoff Mem. vi; *D. rufost*

*innotata*, *fasciata*, p. 335, *perhamata*, p. i

p. 338, *pulcherrima*, p. 339, *xanthoptera*,  
HAMPSON, Moths of India, i : n. spp.

*Drucea*, n. n. for pt. of *Mastigocera*; KIRBY,

*Drymæa*, Butl. : characters and systematic po  
pp. 20-23, Tijdschr. Ent. xxxv.

*Duga rana*, Goram, SWINHOE, p. 96, pl. iii, fig

*Duomitus kilimanjarensis*, E. Africa, HOLLAI

*D. fuscipars*, Sikkim, HAMPSON, p. 309, I

*Dycladia catherina*, *rogenhoferi*, *epimethew*  
Brazil, SCHAUS, P. Z. S. 1892 (figure  
pl. i), n. spp.

*Dysodia albifurca*, Sikkim, HAMPSON, p. 369,

*Earias chlorophyllana*, Mardin, STAUDINGER  
iv, n. sp.

*Echedorus argentina*, Brazil, SCHAUS, p. 321, I

*Ecpantheria pellucida*, Brazil, SCHAUS, p. 2

SCHAUS, American Lep. pl. iii, figs. 11 &

*Ectrocta*, n. g., *Bombycidae*, for *E. diaphana*,  
Moths of India, i, p. 33.

*Eligma duplicata*, Trop. Africa; AURIVILLIU

*Ellida* (sub *Edema*) *transversata*, Wlk., = (*ge*  
Canad. Ent. xxiv.

*Encaumaptera*, n. g., *Arbelidae*, p. 315, for I  
p. 316, HAMPSON, Moths of India, i.

*Endagria fuscula*, Tunis, STAUDINGER, p. 2

e. Z. Lep. v; *E. cossoides*, Centr. Asia, G  
Zeit. xxxvii, n. sp.

*Ephemeroidea*, n. g., *Zygænidæ*, for *E. ariel*,  
HAMPSON, p. 242, Moths of India, i.

*Epimydia*, n. g. for *E. dialampa*, n. sp., Siberia  
p. 346, Deutsche e. Z. Lep. v.

- Eremocossus*, n. g., *Cossida*, type *fœdus*, Swinh. ; HAMPSON, p. 313, Moths of India, i.
- Eressa politula*, India, p. 52, *detola*, *olinda*, Australia, p. 53, SWINHÖE, Cat. Lep. Oxford, n. spp.
- Eriogaster lanestris*, variation in colour of cocoons discussed ; BATESON (40, 41).
- Eriphioides*, n. n. for *Eriphia*, Feld. ; KIRBY, p. 159, Cat. Lep. Het. i.
- Eterusia submarginalis*, Cambodia, SWINHÖE, p. 81, Cat. Lep. Oxford, n. sp.
- Etobesa tivoc*, Peru, SCHAUS, p. 339, P. Z. S. 1892, n. sp.
- Eucereon ladas*, Brazil, SCHAUS, p. 278, P. Z. S. 1892 (figured, SCHAUS, American Lep. pl. i, fig. 26) ; *E. clementsi*, St. Lucia, SCHAUS, p. 10, pl. i, fig. 25, t. c. : n. spp.
- Eudelia venusta*, Wlk., = (*Bombyx aristotelia*, *rufescens*, Phil.) ; REED, p. 68, Act. Soc. Chili, i.
- Eudoxyla bosscha*, Borneo, HEYLAERTS, p. 45, Ann. Ent. Belg. xxxvi, n. sp.
- Eudryas grata*, var., = (*sta. johannis*, Wlk.), note on ; SMITH, p. 134, Canad. Ent. xxiv. *E. sta. johannis*, note on ; GROTE, p. 236, Canad. Ent. xxiv.
- E. ? liturata*, Cameroons, AURIVILLIUS, Ent. Tidskr. xiii, p. 187, n. sp.
- Eudule venata*, Pern., *aurata*, Brazil, SCHAUS, p. 284, P. Z. S. 1892 (figured, SCHAUS, pl. ii, American Lep.), n. spp.
- Eulimacodes möschleri*, Mexico, SCHAUS, p. 324, P. Z. S. 1892, n. sp.
- Eumeta javanica*, Java, *wallacei*, Borneo, SWINHÖE, p. 226, Cat. Lep. Oxford, n. spp.
- Euproctis fulviceps*, variation ; MEYRICK, p. ii, P. E. Soc. 1892.
- E. negrita*, p. 471, *arenacea*, p. 476, *antiphates*, p. 478, *flavimaculata*, p. 480, *albopunctata*, *nigripennis*, p. 481, India, HAMPSON, Moths of India, i ; *E. (Cherotricha) sabulosa*, p. 8, *cinerea*, p. 10, Java, HEYLAERTS, Ann. Ent. Belg. xxxvi : n. spp.
- Eupyræ psittacus*, *consors*, *aurata*, p. 273, *bacchans*, p. 274, Peru, SCHAUS, P. Z. S. 1892 (figured, SCHAUS, American Lep. i), n. spp.
- Euschema* : vide *Geometridæ*.
- Eusemia communis*, *fasciatrix*, *communicans*, *vetula*, variation noticed, *E. hesperioides*, pl. v, fig. 3, *saturata*, fig. 1, figured ; SWINHÖE, p. 160, Cat. Lep. Oxford. *E. opheltes*, ♂ figured ; POUJADE, pl. xi, figs. 4 & 4a, N. Arch. Mus. Paris (3) iii. *E. xanthopyga*, fig. 1, *mozambica*, fig. 2, *longipennis*, fig. 3, *deficiens*, fig. 4, pl. viii, *novemmaculata*, pl. ix, fig. 1, *nigridorsa*, fig. 2, *coa*, pl. xi, fig. 1, figured ; MABILLE & VUILLOT, Nov. Lep. *E. vilthoroides*, figured ; OBERTHUR, pl. i, fig. 4, p. 8, Études d'Ent. xvi.
- E. millionata*, Philippines, pl. v, fig. 2, p. 162, *doreana*, Dorey, fig. 4, p. 164, SWINHÖE, Cat. Lep. Oxford, n. spp.
- Eutane brevis*, Borneo, SWINHÖE, p. 126, pl. iii, fig. 13, Cat. Lep. Oxford, n. sp.
- Felderia*, n. n. for *Acreagris*, Feld. ; KIRBY, p. 163, Cat. Lep. Het. i.

- Flavinia dubia, darna, janeira*, Brasil, *quicha*, p. 286, *chibcha*, p. 287, Peru, SCHAUS, P. Z. S. 1892 (*cf. Cyloppoda*), n. spp.
- Galethalea peruviana*, Peru, SCHAUS, p. 277, P. Z. S. 1892 (figured, SCHAUS, pl. i, fig. 22, American Lep.), n. sp.
- Gangamela aymara*, Peru, SCHAUS, p. 285, P. Z. S. 1892 (figured, SCHAUS, American Lep. pl. ii, fig. 9), n. sp.
- Gangarides vardena*, Borneo, SWINHOE, p. 270, pl. vii, fig. 3, Cat. Lep. Oxford, n. sp.
- Gardinia*, n. n. for *Chrysocale*, Butl. ; KIRBY, p. 286, Cat. Lep. Het. i.
- Gargetta nagaensis*, p. 135, *curvata*, *albimacula*, p. 136, India, HAMPSON, Moths of India, i, n. spp.
- Gartha dalsa*, Brazil, SCHAUS, American Lep. i, pl. i, fig. 15, n. sp.
- Gastropacha quercifolia*, scale-like hairs ; PACKARD, Ann. N. H. (6) ix, p. 373.
- G. gabunica*, W. Africa, AURIVILLIUS, p. 199, Ent. Tidskr. xiii, n. sp.
- Givira tecmessa, philomela*, Brazil, SCHAUS, p. 329, P. Z. S. 1892, n. spp.
- Glaucopsis iridea*, Sierra Leone, MABILLE, p. cxxxviii, Bull. Soc. Ent. Fr. lxi, n. sp.
- Gluphisia trilineata*, full-grown larva ; BEUTENMULLER, p. 67, Bull. Am. Mus. iv.
- G. quinquelinea*, Oregon, DYAR, p. 168, Ent. News, iii, n. sp.
- Goë*, n. g., *Zygenidæ*, for *G. diaphana*, n. sp., Burma : HAMPSON, p. 242, Moths of India, i.
- Gonimbrasia rubricostalis*, Sierra Leone, KIRBY, p. 174, pl. xi, fig. 2, Ann. N. H. (6) ix, n. sp.
- Gonometa ejostedti*, Cameroons, AURIVILLIUS, p. 199, Ent. Tidskr. xiii, n. sp.
- Gorgopsis abbottii*, E. Africa, HOLLAND, Ent. xxv (Supp.), p. 94, n. sp.
- Gurna*, n. g. for *Dysauzes indica*, Moore ; SWINHOE, p. 123, Cat. Lep. Oxford.
- Gymnelius serra*, Brazil, SCHAUS, p. 274, P. Z. S. 1892 (figured, SCHAUS, American Lep. pl. i, fig. 10), n. sp.
- Gynanisa isis*, Westw., ♀ described ; KIRBY, Ent. xxv, p. 267.
- Halius chlorana*, variation in colour of cocoons ; TUTT, Ent. Rec. iii, p. 9.
- Halisidota*, notes on species of ; DYAR, Canad. Ent. pp. 304–306. *H. albi* and *agassizii*, larvæ noticed ; DYAR, Psyche, vi, p. 323.
- H. sanguivenosa*, Vancouver I., NEUMOEGEN, p. 228, Canad. Ent. xxiv ; *H. oruba*, Brazil, SCHAUS, p. 280, P. Z. S. 1892 : n. spp.
- Hallicornia*, n. n. for *Polymona*, Wlk. ; KIRBY, p. 822, Cat. Lep. Het. i.
- Haloplia*, n. g., *Drepanulidæ*, for *Nelcynda orciferaria*, Wlk. ; SNELLEN, p. 14, the insect figured, pl. i, fig. 1, Tijdschr. Ent. xxxv.
- Hanisa subnotata*, figured, pl. viii, fig. 16 ; SWINHOE, Cat. Lep. Oxford.
- Hapigia xolotl*, Mexico, p. 339, *accipiter*, *phocus*, p. 340, Brasil, SCHAUS, P. Z. S. 1892, n. spp.
- Harpyia ? tenuis*, Brazil, SCHAUS, p. 336, P. Z. S. 1892, n. sp.

- Harrisina janeira*, *dantasi*, *eminens*, Brazil, SCHAUS, p. 272, P. Z. S. 1892 (figured, pl. i, figs. 1 & 2, SCHAUS, American Lep. i) : n. spp.
- Hectomonas fusca*, *crocea*, Australia, LUCAS, p. 283, P. Linn. Soc. N.S.W. (2) vi ; *H. pteromela*, S. Australia, LOWER, p. 5, Tr. R. Soc. S. Austr. xv : n. spp.
- Heliura venata*, Butl., = (*ælia*, Schaus), figured, pl. i, fig. 20 ; SCHAUS, American Lep.
- Hepialiscus*, n. g., *Hepialidæ*, type *nepalensis*, Wlk. ; HAMPSON, p. 317, Moths of India, i.
- Hepialus* (*Charagia*) *blackburnii*, S. Australia, LOWER, p. 5, Tr. R. Soc. S. Austr. xv ; *H. daphnandra*, *hilaris*, Australia ; LUCAS, p. 284, P. Linn. Soc. N.S.W. (2) vi ; *H. kenia*, E. Africa, HOLLAND, Ent. xxv (Supp.), p. 94 : n. spp.
- Heterocampa læca*, p. 333, *hertha*, *limosa*, *virgea*, Brazil, p. 334, *epona*, Peru, *atrax*, *perilleus*, Brazil, p. 335, SCHAUS, P. Z. S. 1892, n. spp.
- Heteropan* = (*Birtina*, Wlk.) *lycænoides*, Wlk., figured, pl. ii, fig. 12 ; SWINHOE, Cat. Lep. Oxford.
- H. flavimacula*, Burma, HAMPSON, p. 256, Moths of India, i, n. sp.
- Heterusia luteoradiata*, Costa Rica, THIERRY-MIEG, p. 236, Le Nat. 1892, n. sp.
- Heylaertsia*, n. subg. of *Psyche* for *griseata*, *fusca*, *nudilineata*, Hampson ; HAMPSON, p. 298, Moths of India, i.
- Hildala*, n. g., *Limacodidæ*, p. 231, for *H. miniacea*, *uniformis*, n. spp., Port Essington, p. 232 ; SWINHOE, Cat. Lep. Oxford.
- Histia albimacula*, Burma, HAMPSON, p. 280, Moths of India, i, n. sp.
- Hydrius bochica*, Peru, *theresa*, *bragansa*, *lucrimosa*, p. 320, *sordida*, p. 321, Brazil, SCHAUS, P. Z. S. 1892 ; *H. victorio*, Loja, *pompilus* (sic), Palandra, DOGNIN, p. 131, Le Nat. 1892 : n. spp.
- Hydrusa chroma*, Australia, p. 50, *basirufa*, Cambodia, p. 51, SWINHOE, Cat. Lep. Oxford ; *H. recedens*, Queensland, LUCAS, p. 281, P. Linn. Soc. N.S.W. (2) vi : n. spp.
- Hygrochroa limosa*, Brazil, SCHAUS, p. 325, P. Z. S. 1892, n. sp.
- Hylesia muscula*, Brazil, VUILLOT, p. cxcii, Bull. Soc. Ent. Fr. lxi, n. sp.
- Hyparpaz venus*, Colorado, NEUMOEGEN, p. 226, Canad. Ent. xxiv, n. sp.
- Hypatia*, n. n. for *Hysia*, Wlk. ; KIRBY, p. 147, Cat. Lep. Het. i.
- Hypereschra nigribasis*, Sikkim, HAMPSON, p. 165, Moths of India, i, n. sp.
- Hypolamprus*, n. g., *Thyrididæ*, p. 364, type *striatalis*, Swinhoe, and including *H. obscuralis*, *atrostriatus*, n. spp., India, p. 365 ; HAMPSON, Moths of India, i.
- Hypoprepia miniata*, egg and young larva ; BLAISDELL, p. 246, Ent. News, iii.
- Hypsa perimele*, Weym., characters and position noticed, p. 88, *isthmia*, Wlk., figured, pl. iii, fig. 2 ; SWINHOE, Cat. Lep. Oxford.
- Hypsa nicobarica*, Nicobar Is., *malina*, Halmahera, p. 87, *ghara*, Ké I., p. 89, *albiformis*, Borneo, p. 90, *ochrealis*, Goram, *avacta*, Batchian, p. 92, SWINHOE, Cat. Lep. Oxford, n. spp.

- Ichtyosoma cassiope*, Brazil, SCHAUS, p. 341, P. Z. S. 1892, n. sp.
- Ichthygera bifaria*, early stages; DYAR, Ent. News, iii, p. 5. *I. ros*, larval stages; BEUTENMÜLLER, p. 67, Bull. Am. Mus. iv; *I. albissima*, n. var. *specificus*; DYAR, Canad. Ent. xxiv, p. 180.
- I. multanoma*, Oregon, DYAR, Canad. Ent. xxiv, p. 179; *I. costicomma*, India, HAMPSON, Moths of India, i, p. 173: Nilgiri Hills, SWINHORE, p. 301, Cat. Lep. Oxford: n. spp.
- Idalus ortus*, Brazil, SCHAUS, p. 279, P. Z. S. 1892 (figured, SCHAUS, American Lep., pl. ii, fig. 1), n. sp.
- Idonastion*, n. g. for *Limacodes apicalis*, Wlk.; SWINHORE, p. 238, Cat. Lep. Oxford.
- Ira textula*, notes on; MORTON, Ent. News, iii, p. 1.
- Ianthrens gaze*, Peru, SCHAUS, p. 274, P. Z. S. 1892 (figured, pl. i, fig. 9, American Lep. i), n. sp.
- Jana gabonica*, W. Africa, AURIVILLIUS, p. 195, Ent. Tidskr. xiii, n. sp.
- Janassa cerigoides*, figured; SWINHORE, pl. vii, fig. 5, Cat. Lep. Oxford.
- Katha apicalis*, Wlk. (sub *Lithosia*), figured, pl. iv, fig. 9; SWINHORE, Cat. Lep. Oxford.
- Kosala rufa*, Naga Hills, HAMPSON, p. 419, Moths of India, i, n. sp.
- Lalia prolata*, India, SWINHORE, p. 195, Cat. Lep. Oxford; *L. heterogyna*, Kashmir, HAMPSON, p. 443, Moths of India, i: n. spp.
- Laganda picaria*, Wlk., figured, pl. vii, fig. 2, SWINHORE, Cat. Lep. Oxford.
- Lagoa* to be the type of a new family, *Lagoidea*; PACKARD, Psyche, vi, p. 281: on the seven pairs of abdominal legs and metameric glandular processes of larva; PACKARD, Zool. Anz. xv, pp. 229-234.
- Langendorfia polybia*, Brazil, SCHAUS, p. 329, P. Z. S. 1892, n. sp.
- Lasiocampa dieckmanni*, figured, pl. iv, fig. 5; Romanoff Mem. vi. *L. leta*, Wlk., figured, pl. v, fig. 1, larva noticed, p. 315; STAUDINGER, t. c.
- L. (Chrysopoloma) theorini*, Gaboon, AURIVILLIUS, p. 198, Ent. Tidskr. xiii; *L. salambo*, Delagoa Bay, VUILLOT, p. cxc, Bull. Soc. Ent. Fr. lxi: n. spp.
- Lebeda doeri*, Brazil, SCHAUS, p. 319, P. Z. S. 1892, n. sp.
- Leptisoma mundipicta*, figured, pl. v, fig. 14; SWINHORE, Cat. Lep. Oxford.
- L. santicum*, Philippines, p. 142, *absurdum*, Salawatti, *acceptum*, Celebes, pl. v, fig. 5, *kala*, Ké I., fig. 8, p. 143, *confusum*, *kondekum*, Java, *proprium*, Manilla, fig. 12, p. 144, *ægrotum*, New S. Wales, fig. 15, p. 145, *galbanum*, Philippines, p. 146, SWINHORE, Cat. Lep. Oxford, n. spp.
- Leptothrix*, n. g., *Zygænidæ*, for *L. tettigonioides*, n. sp., Sumatra; HEYLAERTS, p. 47, Ann. Ent. Belg. xxxvi.
- Leucodrepana*, n. g., *Drepanulidæ*, for *L. idæoides*, *nivea*, *obliquilinea*, n. spp., Sikkim, HAMPSON, p. 333, Moths of India, i.
- Leucoma salicis*, embryology; HENKING, Z. wiss. Zool. liv, p. 166.

- L. tavetensis*, E. Africa, HOLLAND, Ent. xxv (Supp.), p. 93; *L. thyridophora*, India, HAMPSON, p. 488, Moths of India, i; *L. lobipennis*, Dorey, SWINHOE, p. 203, Cat. Lep. Oxford : n. spp.
- Liparis monacha*, habits of larva, &c.; FENK (279). *L. salicis*, destruction by parasites; CARPENTIER, Bull. Soc. L. Nord France, x, p. 35.
- L. preussi*, W. Africa, MABILLE & VUILLOT, Nov. Lep. p. 57, pl. ix, fig. 5 (referred by Kirby in Cat. Lep. Het. to *Phægorista* in *Nyctemeridæ*), n. sp.
- Liparopsis*, n. g., *Notodontidæ*, for *L. postalbida*, n. sp., Naga Hills; HAMPSON, Moths of India, i, p. 154.
- Lirimiris mechanica*, Loja, DOGNIN, p. 169, Le Nat. 1892, n. sp.
- Lithosia* (sub *Tinea*) *entella*, Cr. = (*Gnophria ceramensis*, Voll.); WEYMER, S. E. Z. liii, p. 122. *L. caniola*, var. *complanoides*; FUCHS, J.B. nass. Ver. xlv, p. 88. *L. tosola*, *semamaculata*, figured, pl. ix, figs. 2 & 3, MABILLE & VUILLOT, Nov. Lep.
- L. pusa*, Loja, DOGNIN, p. 185, Le Nat. 1892, n. sp.
- Lobeza fuvilla*, Loja, DOGNIN, p. 33, Le Nat. 1892, n. sp.
- Lapa dogninia*, China, SONTTHONNAX, Échange, 1892, p. 20, n. sp.
- Lomera albifrons*, Australia, SWINHOE, p. 225, Cat. Lep. Oxford, n. sp.
- Lonomia carnica*, Brazil, SCHAUS, p. 318, P. Z. S. 1892, n. sp.
- Lophopteryx atrofusa*, Sikkim, HAMPSON, p. 166, Moths of India, i, n. sp.
- Lophosoma*, n. g. for *Syntomis cupreu* and *quadricolor*, Wlk.; SWINHOE, p. 58, Cat. Lep. Oxford.
- Lyces mæra*, Brazil, SCHAUS, p. 285, P. Z. S. 1892 (figured, pl. ii, fig. 17, SCHAUS, American Lep.), n. sp.
- Lyclepe vagilinea*, figured, pl. iv, fig. 11; SWINHOE, Cat. Lep. Oxford.
- L. ruenca*, Sula, SWINHOE, p. 101, pl. iv, fig. 15, Cat. Lep. Oxford, n. sp.
- Lymantria manicata*, Cameroons, AURIVILLIUS, p. 193, Ent. Tidskr. xiii, n. sp.
- Macrocrampus*, n. n. for *Crambomorpha*, Feld.; KIRBY, p. 337, Cat. Lep. Het. i.
- Macromphalia dedecora*, Feist., = (*uncilla*, Phil.), *rubrogrisea*, Phil., = (*rustica*, Phil.); REED, p. 68, Act. Soc. Chili, i.
- Macronola*, n. n. for *Cyana*, Wlk.; KIRBY, p. 299, Cat. Lep. Het. i.
- Macroleptera*, n. g., *Limacodidæ*, type *minutissima*, Swinh.; HAMPSON, p. 376, Moths of India, i.
- Mardara albostrata*, Manipur, HAMPSON, p. 455, Moths of India, i, n. sp.
- Marthula nora*, *pleione*, Brazil, SCHAUS, p. 341, P. Z. S. 1892, n. spp.
- Marsypophora dissimilipennis*, Loja, DOGNIN, Le Nat. 1892, p. 123, n. sp.
- Massaga delicia*, Butl., ♀ described; AURIVILLIUS, p. 186, Ent. Tidskr. xiii.
- Mazia*, n. n. for *Phryganopteryx*, Saalm.; KIRBY, p. 206, Cat. Lep. Het. i.
- Megaceramis*, n. g., *Notodontidæ*, for *M. lamprolepis*, n. sp., Sikkim; HAMPSON, p. 167, Moths of India, i.
- Megalopyge radiata*, *acca*, Brazil, SCHAUS, p. 322, P. Z. S. 1892, n. spp.

- Mekla*, n. g., *Cossidae*, for *Degia deficiens*, Wlk. ; SWINHÖE, p. 283, Cat. Lep. Oxford.
- Melanchroia braganza, palmeira*, Brasil, SCHAUS, p. 288, P. Z. S. 189 (figured and referred to *Leucopseuma*, SCHAUS, p. 8, pl. ii, figs. 24 & 26, American Lep.), n. spp.
- Melanothrinx leucotrigona*, Burma, HAMPSON, Moths of India, i, p. 44, n. sp.
- Melia*, n. g., near *Ptilophora*, for *M. danbyi*, n. sp., British Columbia NEUMÖGEN, p. 225, Canad. Ent. xxiv.
- Mennis sceata, cytherea*, Peru, *una*, Brazil, SCHAUS, p. 287, P. Z. S. 189 (figured, SCHAUS, American Lep. pl. ii), n. spp.
- Metagarista manas*, synonymical note ; WEYMER, p. 125, S. E. Z. liii  
*M. triphanoides* and *manas*, synonymy ; AURIVILLIUS, Ent. Tidskr. xiii, p. 184.
- M. asiyade*, Sierra Leone, VUILLOT, p. cxl, Bull. Soc. Ent. Fr. lxi, n. sp.
- Metanastris obliquifascia*, Darjiling, p. 263, *lucifuga*, Singapore, p. 264 pl. vi, fig. 5, SWINHÖE, Cat. Lep. Oxford, n. spp.
- Metarctia inconspicua*, Trop. Africa, HOLLAND, Ent. xxv (Supp.), p. 93 n. sp.
- Metaschalis*, n. g., *Notodontidae*, type *disrupta*, Moore ; HAMPSON, Moths of India, i, p. 158.
- Metosamia*, n. g., *Saturniidae*, p. 276, for *M. godmani*, n. sp., Mexico, p. 277 Druce, Ann. N. H. (6) ix.
- Metriophyla lena*, Peru, SCHAUS, p. 277, P. Z. S. 1892 (figured, pl. i fig. 24, SCHAUS, American Lep.), n. sp.
- Mila*, n. g., *Agaristidae*, for *Hypsa concinnula*, Mab. ; AURIVILLIUS, Ent. Tidskr. xiii, p. 187.
- Millieria cyanivena*, Burma, HAMPSON, p. 263, Moths of India, i, n. sp.
- Mimeusemia tara*, Borneo, SWINHÖE, p. 167, pl. vi, fig. 11, Cat. Lep. Oxford, n. sp.
- Monotropia*, n. n. for *Licnoptera*, Meyr. ; KIRBY, p. 307, Cat. Lep. Hel. i.
- Mydrothauma*, n. g., near *Eupyra*, p. 121, for *M. ada*, n. sp., Borneo, p. 121 pl. vi, fig. 1, BUTLER, P. Z. S. 1892, n. sp.
- Næarasa*, n. n., to replace *Næara*, H.-Sch. ; STAUDINGER, p. 299, Romanol. Mem. vi.
- Naclia syntomida*, Mardin, STAUDINGER, p. 248, Deutsche e. Z. Lep. iv  
*N. ? erythrogaster*, Freetown, MABILLE, p. cxxxix, Bull. Soc. Ent. F. lxi ; *N. aitcha*, p. cxl, *msila*, p. cxli, Sierra Leone, VUILLOT, t. c. n. spp.
- Nadata oregonensis*, number of larval stages discussed ; DYAR, Psyche, p. 337.
- Narosa velutina*, figured ; SWINHÖE, pl. vii, fig. 8, Cat. Lep. Oxford.
- Nelo lippa*, p. 287, *caullama*, p. 288, Peru, SCHAUS, P. Z. S. 1892 (figured, SCHAUS, American Lep. pl. ii, fig. 18) ; *N. solimara*, Colomb. THIERRY-MIEG, p. 262, Le Nat. 1892 : n. spp.
- Nemeta* : characters and affinities ; SNELLEN, p. 9, Tijdschr. Ent. xxx
- Neochera butleri*, Assam, p. 84, *zaria*, Manilla, p. 85, SWINHÖE, Cat. L. Oxford, n. spp.

- Neomiresa copac*, Peru, SCHAUS, p. 324, P. Z. S. 1892, n. sp.
- Nerice bidentata*, early stages ; SOULE, *Psyche*, vi, p. 276 : metamorphoses ; MARLATT, Tr. Kansas Ac. xi, p. 110, figs.
- N. ? leechi*, Amurland, STAUDINGER, p. 348, pl. v, fig. 2, Romanoff Mem. vi ; *N. upina*, China, ALPHÉRAKY, p. 17, pl. i, fig. 7, t. c. ; *N. disjuncta*, Loja, DOGNIN, p. 85, Le Nat. 1892 : n. spp.
- Nesace*, n. n. for part of *Euchromia*, Walk. ; KIRBY, p. 112, Cat. Lep. Het. i.
- Neurosymploca agria*, Transvaal, DISTANT, p. 236, pl. ii, fig. 9, Naturalist Transvaal, n. sp.
- Newmania*, n. g., *Liparidæ*, for *Teara guenei*, Newm. ; SWINHOE, p. 199, Cat. Lep. Oxford.
- Nishada fusciclosa* figured, pl. iv, fig. 16 ; SWINHOE, Cat. Lep. Oxford.
- Nola fumosa*, Butl. = (*strigulosa*, Stgr.) ; STAUDINGER, p. 256, Romanoff Mem. vi. *N. minuscula*, larva ; DYAR, *Psyche*, vi, p. 248.
- N. candidalis*, Amurland, STAUDINGER, p. 258, Romanoff Mem. vi ; *N. lactaria*, Amurland, GRAESER, p. 211, Berl. Ent. Zeit. xxxvii ; *N. quadrimaculata*, p. 43, *ranhasseltii*, p. 44, Java, HEYLAERTS, Ann. Ent. Belg. xxxvi : n. spp.
- Nossa*, n. n. for *Atossa*, Moore ; KIRBY, p. 56, Cat. Lep. Het. i.
- Notodonta streckfussi*, Carinthia, HONRATH, p. 446, Berl. Ent. Zeit. xxxvi ; *N. vittata*, Anti-Taurus, STAUDINGER, p. 262, Deutsche e. Z. Lep. iv ; *N. graeseri*, p. 351, pl. v, fig. 3, *aliena*, fig. 4, p. 352, *oberthuri*, fig. 5, p. 354, Amurland, STAUDINGER, Romanoff Mem. vi ; *N. ? argenteo-maculata*, Cameroons, AURIVILLIUS, p. 196, Ent. Tidskr. xiii ; *N. rufu*, Nāga Hills, HAMPSON, Moths of India, i, p. 163 ; *N. descherei*, British Columbia, NEUMOEGER, p. 227, Canad. Ent. xxiv : n. spp.
- Nudaria murina*, varr. described ; STAUDINGER, p. 249, Deutsche e. Z. Lep. iv.
- Numenes siletti*, neururation outlined ; SWINHOE, p. 206, Cat. Lep. Oxford.
- Nyctemera amica*, metamorphoses ; WHITE, p. 68, Vict. Nat. ix.
- N. secundiana*, Queensland, LUCAS, p. 280, P. Linn. Soc. N.S.W. (2) vi, n. sp.
- Nyssia vetusta*, pl. viii, fig. 15, *cruda*, fig. 12, figured and referred to *Thosea*, p. 237 ; SWINHOE, Cat. Lep. Oxford.
- Nyssia sulla*, Brazil, SCHAUS, p. 324, P. Z. S. 1892, n. sp.
- Oberthueria*, n. n. for *Euphraor*, Oberth. ; KIRBY, p. 720, Cat. Lep. Het. i.
- Oberthueria*, n. g. for *Euphranor cæca*, Oberth. ; STAUDINGER, p. 337, Romanoff Mem. vi.
- Ocinara albiceps*, Wlk. (sub *Naprepa*), figured, pl. vii, fig. 7 ; SWINHOE, Cat. Lep. Oxford.
- Ocnieria lapidicola*, varr. described ; STAUDINGER, p. 337, Deutsche e. Z. Lep. iv.
- O. destituta*, Taurus, STAUDINGER, p. 256, Deutsche e. Z. Lep. iv, n. sp.
- Ocnierogyia*, n. g., *Liparidæ*, for *O. amanda*, n. sp., Taurus ; STAUDINGER, p. 254, Deutsche e. Z. Lep. iv.



- Odonestis inobtrusa*, Wlk., figured ; SWINHOE, pl. vi, fig. 15, Cat. Lep. Oxford.
- O. directa*, Japan, p. 261, pl. vi, fig. 4, SWINHOE, Cat. Lep. Oxford ; *O. castanea*, p. 426, *isocyma*, p. 427, E. India, HAMPSON, Moths of India, i : n. spp.
- Oedema matheis*, Brazil, *tlotzin*, Mexico, SCHAU, p. 332, P. Z. S. 1892, n. spp.
- Edenasia salicis*, = (*Dryocampa riversii*, Behr.) ; DYAR, Psyche, vi, p. 222.
- Ed. terrena*, *maztla*, Mexico, *guarana*, p. 331, *inca*, Peru, p. 332, SCHAU, P. Z. S. 1892 : n. spp.
- Elonia*, n. g. for *Pseudopsyche*, Edw. ; KIRBY, p. 524, Cat. Lep. Het. i.
- Oiketicus abbotii*, prolongation of larval life ; SLOSSON, Ent. News, v, p. 49.
- Olceclosteria maya*, Mexico, *mutusca*, Brazil, SCHAU, p. 326, P. Z. S. 1892, n. spp.
- Olene basinigra*, Sumatra, HEYLAERTS, p. 11, Ann. Ent. Belg. xxvi, n. sp.
- Opharus lugubris*, *morosus*, Brazil, SCHAU, p. 282, P. Z. S. 1892, n. spp.
- Oreta obliquilinea*, p. 349, *griseotincta*, p. 350, India, HAMPSON, Moths of India, i ; *O. singapura*, Singapore, SWINHOE, p. 243, pl. vii, fig. 15, Cat. Lep. Oxford : n. spp.
- Orgyia cana*, metamorphoses ; DYAR, Psyche, vi, p. 203. *O. leucostigma*, metamorphoses ; DYAR, t. c., p. 324.
- Ormiscodes eumedidoides*, Amazons, *aurora*, Bogota, VUILLOT, p. cxciii, Bull. Soc. Ent. Fr. lxi ; *O. opis*, Brazil, SCHAU, p. 318, P. Z. S. 1892 : n. spp.
- Orna*, n. n. for *Euctenia*, Feld. ; KIRBY, p. 81, Cat. Lep. Het. i.
- Orthocraspeda*, n. g., *Limacodidæ*, type *trima*, Moore ; HAMPSON, p. 393, Moths of India, i.
- Orthorene arpi*, *janeira*, Brazil, SCHAU, p. 289, P. Z. S. 1892 (figured, pl. iii, SCHAU, American Lep.), n. spp.
- Othria meridionalis*, Brazil, SCHAU, p. 272, P. Z. S. 1892, n. sp.
- Oxyplax*, n. g., *Limacodidæ*, type *ochracea*, Moore ; HAMPSON, p. 376, Moths of India, i.
- Pachyma*, n. g., near *Pachypasa*, p. 115, for *P. trapezina*, n. sp., Cameroons, p. 116 ; WEYMER, S. E. Z. liii.
- Pachypasa richelmanni*, E. Africa, WEYMER, S. E. Z. liii, p. 113, n. sp.
- Paidina obtusa*, var. *sutschana*, described ; STAUDINGER, p. 260, Romanoff Mem. vi.
- Pulpifer*, n. g., *Hepialidæ*, type *sexnotatus*, Moore ; HAMPSON, p. 316, Moths of India, i.
- Parasa argentilinea*, p. 389, *albipuncta*, p. 390, *dentata*, p. 391, India, HAMPSON, Moths of India, i ; *P. minima*, Mexico, SCHAU, p. 322, P. Z. S. 1892 : n. spp.
- Pelobrochia*, n. g., near *Nudaria*, for *Scæodora rava*, Luc. ; LUCAS, p. 250, P. Linn. Soc. N.S.W. (2) vii.

- Pericopis cubana*, H. Sch., = (*Phalœ gaumeri*, Druce); WEYMER, p. 122, S. E. Z. liii.
- P. montesuma*, Mexico, SCHAUUS, p. 283, P. Z. S. 1892, n. sp.
- Peronettis naringa*, Philippines, pl. iii, fig. 16, p. 99, SWINHOE, Cat. Lep. Oxford, n. sp.
- Perophora corcovada*, p. 326, *acuta*, p. 327, Brazil, SCHAUUS, P. Z. S. 1892, n. spp.
- Phacusa cyanocera*, Burma, HAMPSON, p. 241, Moths of India, i; *P. variata*, Dorey, SWINHOE, p. 58, Cat. Lep. Oxford : n. spp.
- Phæoptera schäfferi*, Brazil, p. 280, *proba*, Mexico, *notata*, *granifera*, *ursina*, Brazil, p. 281, SCHAUUS, P. Z. S. 1892 (*notata*, *ursina*, *granifera*, figured, SCHAUUS, American Lep. pl. iii), n. spp.
- Phalacra cæcisa*, Sikkim, HAMPSON, p. 345, Moths of India, i, n. sp.
- Phalænooides bulleri*, pl. v, fig. 6, *macleayi*, fig. 11, p. 157, Australia, SWINHOE, Cat. Lep. Oxford, n. spp.
- Phassus punctimargo*, *viridis*, India, SWINHOE, p. 291, Cat. Lep. Oxford ; *P. punctimargo*, p. 319, *auratus*, *viridis*, p. 321, India, HAMPSON, Moths of India, i; *P. marcius*, Mexico, DRUCE, p. 273, Ann. N. H. (6) ix; *P. absyrtus*, Brazil, SCHAUUS, p. 330, P. Z. S. 1892 : n. spp.
- Phaуда fuscalis*, Assam, SWINHOE, p. 60, Cat. Lep. Oxford, n. sp.
- Phœsia portlandia*, early stages; DYAR, Psyche, vi, p. 351.
- P. excurvata*, Sikkim, HAMPSON, Moths of India, i, p. 161; *P. grisea*, India, SWINHOE, p. 298, Cat. Lep. Oxford : n. spp.
- Philagria*, n. n. for *Æonistis*, Hb.; KIRBY, p. 336, Cat. Lep. Het. i.
- Philænia*, n. n. for *Pharmacis*, Möschl.; KIRBY, p. 885, Cat. Lep. Het. i.
- Philudoria*, n. n. for *Odonestis*, Steph.; KIRBY, p. 820, Cat. Lep. Het. i.
- Phlebohecta*, n. g., *Chalcosiidæ*, type *fuscescens*, Moore; HAMPSON, p. 251, Moths of India, i.
- Phragmataecia gummata*, Java, SWINHOE, p. 285, pl. viii, fig. 14, Cat. Lep. Oxford, n. sp.
- Phrugmatobia lymphæsea*, Loja, DOGNIN, p. 16, Le Nat. 1892, n. sp.
- Phya psamathe*, Brazil, SCHAUUS, p. 339, P. Z. S. 1892, n. sp.
- Piarosoma*, n. g., *Zygænidæ*, for *P. albicinctum*, n. sp., Burma; HAMPSON, p. 243, Moths of India, i.
- Pielus albofasciatus*, Swan River, SWINHOE, p. 289, Cat. Lep. Oxford, n. sp.
- Pinconia coa*, Mexico, SCHAUUS, p. 322, P. Z. S. 1892, n. sp.
- Pintia insularis*, Singapore, SWINHOE, p. 76, Cat. Lep. Oxford, n. sp.
- Pirga*, n. g. for *P. mirabilis*, Auriv.; AURIVILLIUS, p. 193, Ent. Tidskr. xiii : figured; *op. cit.* xii, pl. ii, fig. 2.
- Pisara opalina*, fig. 14, *acotioides*, fig. 19, *lucidalis*, fig. 12, figured, pl. iv; SWINHOE, Cat. Lep. Oxford.
- Platysygana*, n. g., for *Soritia*? *moëlleri*, Elw.; SWINHOE, p. 57, Cat. Lep. Oxford.
- Pacilocampa simplex*, Australia, SWINHOE, p. 267, Cat. Lep. Oxford, n. sp.
- Polythysana albescentis*, Phil., = (*cinerescens*, Phil.); REED, p. 68, Act. Soc. Chili, i.

- Pompelon subcyanea*, Singapore, p. 71, *rotundata*, Java, p. 72, SWINHO Cat. Lep. Oxford, n. spp.
- Porina kershawi*, Australia, LUCAS, p. 282, P. Linn. Soc. N.S.W. (2), n. sp.
- Porthesia melania*, Asia Minor, STAUDINGER, p. 255, Deutsche e. Z. L. iv; *P. isabellina*, Atjeh, HEYLAERTS, p. 9, Ann. Ent. Belg. xxxv.
- P. aurantiaca*, Sikkim, HAMPSON, p. 485, Moths of India, i: n. sp.
- Preptos*, n. g., *Lasiocampida*, p. 318, for *P. oropus*, n. sp., Mexico, p. 31, SCHAUS, P. Z. S. 1892.
- Pseudantheraea*, n. g., *Saturniida*, p. 109, for *P. daphne*, n. sp., Gold Coast, p. 110; WEYMER, S. E. Z. liii.
- Pseudantiora*, n. n. for *Antiora*, Möschl.; KIRBY, p. 566, Cat. Lep. Het.
- Pseudaphelia*, n. n. for *Aphelia*, Westw.; KIRBY, p. 771, Cat. Lep. Het.
- Pseudasbolia*, n. n. for *Asbolia*, Möschl.; KIRBY, p. 877, Cat. Lep. Het.
- Pseuderchia*, n. n. for *Erchia*, Wlk.; KIRBY, p. 410, Cat. Lep. Het. i.
- Pseudhypsia*, n. n. for *Aganais*, Boisd. pt.; KIRBY, p. 384, Cat. Lep. Het.
- Pseudojana*, n. g., *Eupterotida*, type *incandescens*, Wlk.; HAMPSON, Moths of India, i, p. 48.
- Pseudomyia pellucida*, p. 274, *tijuca*, Brazil, *musca*, p. 275, Mexico, SCHAUS, P. Z. S. 1892 (figured, SCHAUS, American Lep. pl. i), n. spp.
- Pseudopsyche dembowskii*, notes on; STAUDINGER, p. 294, Romanoff Mem. vi.
- Psilura rubripunctata*, E. Africa, WEYMER, p. 108, S. E. Z. liii, n. sp.
- Psychida*: wing-neuration discussed; SPULER, Z. wiss. Zool. liii, p. 63.
- Psyche* (*Eurycyttarus*) *nigra*, p. 299, *decemvena*, p. 300, India, HAMPSON, Moths of India, i, n. spp.
- Pterostoma palpina*, n. var. *gigantina*; STAUDINGER, p. 363, Romanoff Mem. vi.
- Pydna eupatagia*, p. 141, *nigropuncta*, *nigrofasciata*, p. 142, India, HAMPSON, Moths of India, i; *P. calyptis*, Dorey, SWINHO, p. 297, Cat. Lep. Oxford: n. spp.
- Pygæra curtula*, n. var. *canescens*; GRAESER, p. 303, Berl. Ent. Ze. xxxvii. *P. troglodyta*, figured, pl. v, fig. 7, Romanoff Mem. vi.
- P. sieversi*, Amurland, STAUDINGER, p. 370, pl. v, figg. 6a, b, Romanoff Mem. vi; *P. moderata*, Central Asia, GRAESER, p. 303, Berl. Ent. Zeit. xxxvii: n. spp.
- Pygetera*, n. n. for *Cutaphractes*, Feld.; KIRBY, p. 446, Cat. Lep. Het. i.
- Pyrois idiota*, ♂ ♀ figured, pl. iv, figg. 6a, b, Romanoff Mem. vi.
- Rachia striata*, Sikkim, HAMPSON, p. 132, Moths of India, i, n. sp.
- Rumesa fuscipennis*, Burma, HAMPSON, Moths of India, i, p. 143, n. sp.
- Rezia*, n. n. for *Lagaria*, Walk.; KIRBY, p. 149, Cat. Lep. Het. i.
- Rhodareas*, n. g., for part of *Areas*; KIRBY, p. 254, Cat. Lep. Het. i.
- Rhodoneura obliquialis*, p. 355, *multipunctata*, p. 356, *hypargyra*, p. 359, *glaphyralis*, p. 359, *bipuncta*, p. 360, *cuprealis*, p. 361, *oligosticta subcostalis*, *ferrofusa*, *uniformis*, p. 362, *bracteata*, *rufareta*, p. 362, *hypoantha*, *tristis*, *munda*, p. 364, India, HAMPSON, Moths of India (cf. also *Pyralidæ*, &c., p. 277), n. spp.

- Rhoda endymion*, Brazil, SCHAUS, p. 340, P. Z. S. 1892, n. sp.
- Bifargia cloelia*, Brazil, p. 333, *gelduba*, Mexico, p. 339, SCHAUS, P. Z. S. 1892, n. spp.
- Rosema excavata*, luna, Brazil, *luppa*, p. 337, *incita*, Peru, *languida*, unda, Brazil, p. 338, SCHAUS, P. Z. S. 1892, n. spp.
- Sengatissa pretoria*, Transvaal, DISTANT, p. 408, Ann. N. H. (6) x, n. sp.
- Supinella*, n. n. for *Eutheca*, Grote; KIRBY, p. 524, Cat. Lep. Het. i.
- Sarmalia alba*, Philippines, SWINHÖE, p. 275, Cat. Lep. Oxford, n. sp.
- Sarothroceras rhomboidea*, Cameroons, WEYMER, p. 104, S. E. Z. liii, n. sp.
- Sarrothripa reveyana*, larva; DYAR, Psyche, vi, p. 259.
- Saturniida*, notes on various; KIRBY, Ent. xxv, pp. 267-269.
- Saturnia pavonia*, nature, and use of its spines; HEIM, p. xlviii, Bull. Soc. Ent. Fr. lxi. *S. arnobia*, peculiar chrysalis; HOLLAND, Psyche, vi, p. 213, pl. v. *S. carpini*, variation in colour of cocoons discussed; BATESON (40, 41).
- Scaptius juno*, Brazil, SCHAUS, p. 279, P. Z. S. 1892 (figured, SCHAUS, American Lep. pl. ii, fig. 3), n. sp.
- Scea solaris*, Peru, SCHAUS, p. 285, P. Z. S. 1892 (figured, SCHAUS, pl. ii, fig. 14, American Lep.), n. sp.
- Scopsis nigricollum*, Loja, DOGNIN, p. 123, Le Nat. 1892, n. sp.
- Schisuru conspecta*, egg and young larva; DYAR, Psyche, vi, p. 325.
- Sebastea*, n. n. for *Grotea*, Moore; KIRBY, p. 383, Cat. Lep. Het. i.
- Selca cuneifera*, Wlk. (sub *Melia*), figured, pl. iv, fig. 22; SWINHÖE, Cat. Lep. Oxford.
- S. obscura*, Queensland, SWINHÖE, p. 133, Cat. Lep. Oxford, n. sp.
- Semyra straminea*, Mexico, SCHAUS, p. 324, P. Z. S. 1892, n. sp.
- Sermyla morta*, Brazil, SCHAUS, p. 282, P. Z. S. 1892, n. sp.
- Sesapa divisa*, figured, pl. iv, fig. 21; SWINHÖE, Cat. Lep. Oxford.
- Siglophora*, n. g., near *Chandica*, p. 123, for *S. bella*, n. sp., Borneo, p. 124, pl. vi, fig. 2; BUTLER, P. Z. S. 1892.
- Sitina albicans*, W. Australia, SWINHÖE, p. 268, pl. vi, fig. 10, Cat. Lep. Oxford, n. sp.
- Somabrachys*, n. n. for *Brachysoma*, Aust.; KIRBY, p. 930, Cat. Lep. Het. i.
- Somatrichia*, n. n. for *Trichosoma*, Ramb.; KIRBY, p. 274, Cat. Lep. Het. i.
- Soritia bipartita*, Wlk., figured, pl. ii, fig. 9; SWINHÖE, Cat. Lep. Oxford.
- S. viridivena*, *nigribasalis*, HAMPSON, p. 253, Moths of India, i, n. spp.
- Sozusa stovensii*, E. Africa, HOLLAND, Ent. xxv (Supp.), p. 91, n. sp.
- Spatalia albonotata*, Wlk. (sub *Allata*), pl. viii, fig. 2, *punctifera*, Wlk. (sub *Caschira*), fig. 4, *lativitta*, Wlk. (sub *Xylina*), fig. 1, figured; SWINHÖE, Cat. Lep. Oxford.
- S. albifasciata*, Nilgiris, HAMPSON, Moths of India, i, p. 170, n. sp.
- Spilarctia abbotti*, E. Africa, HOLLAND, Ent. xxv (Supp.), p. 92, n. sp.
- Spilosoma urticae*, n. var. *quadripunctata*; COSMOVICI, p. 280, Le Nat. 1892; *S. urticae*, var. *paucipuncta*; FUCHS, p. 89, JB. nass. Ver. xlv.
- Stauropus fagi*, habits noticed; HOLLAND, Ent. M. M. xxviii, p. 206.

- S. pallidifascia*, p. 151, *albivertex, orbifer*, p. 152, India, HAMPSON, Moths of India, i, n. spp.
- Stenophylloides*, n. g., *Lasiocampidae*, type *sikkima*, Moore; HAMPSON, p. 429, Moths of India, i.
- Stibolepis atomaria*, E. Africa, HOLLAND, Ent. xxv (Supp.), p. 93, n. sp.
- Stichobasis*, n. n. for *Diabasis*, Heyl; KIRBY, p. 519, Cat. Lep. Het. i.
- Strigoides fuscus*, p. 280, *decoratus*, p. 281, Australia, SWINHOE, Cat. Lep. Oxford, n. spp.
- Susica congrua*, Wlk., referred to *Natada*, p. 233, figured, pl. viii, fig. 6; SWINHOE, Cat. Lep. Oxford.
- Sychesia hartmanni, janeira*, Brazil, SCHAUS, p. 280, P. Z. S. 1892 (figured, SCHAUS, American Lep. pl. iii), n. spp.
- Symmerista dentata*, p. 335, *tethys, procne, myconos*, p. 336, Brazil, SCHAUS, P. Z. S. 1892, n. spp.
- Syntomis gracilis*, n. var. *lugens*; RÖBER, p. 325, Tijdschr. Ent. xxiv. *S. caspia* and *annetta* are varr. of *maracandina*; ALPHÉRAKY, p. 4, Romanoff Mem. vi. *S. longipennis*, Wlk., figured, pl. ii, fig. 13, *S. annosa*, Wlk., figured and referred to *Hydrusa*, p. 51, pl. ii, fig. 17; SWINHOE, Cat. Lep. Oxford.
- S. sintenisi*, Kurdistan, STANDFUSS, p. 664, pl. xv, fig. 3, Romanoff Mem. vi; *S. rubicunda, pterophorina*, Natal, MABILLE, p. cxxxix, Bull. Soc. Ent. Fr. lxi; *S. unifascia*, p. 212, *flavifrons, quadrifascia*, p. 215, *chlorocera, luteifascia*, p. 218, *eressooides*, p. 220, *nigra, serrata*, p. 221, *ochreipuncta*, p. 222, *erythrosoma*, p. 223, India, HAMPSON, Moths of India, i; *S. cymatilis*, Philippines, p. 40, *insueta*, E. India, pl. ii, fig. 16, p. 41, *aurofasciata*, New Guinea, pl. ii, fig. 19, p. 43, *frustulenta*, Lizard I., p. 44, *deflocca*, Philippines, p. 45, *ypleta*, Waigion, *formicina*, New Guinea, p. 47, *exapta*, Flores, *fata*, Borneo, p. 48, SWINHOE, Cat. Lep. Oxford; *S. trifenestra*, Letti, RÖBER, p. 324, Tijdschr. Ent. xxxiv (fig. in xxxv) : n. spp.
- Syntomoides*, n. g., p. 209, type *imaon*, Cram., and including *S. microchilus*, n. sp., Tenasserim, p. 212; HAMPSON, Moths of India, i.
- Syntrichura doeri*, Brazil, SCHAUS, p. 276, P. Z. S. 1892 (figured, pl. i, fig. 16, American Lep.), n. sp.
- Syssphinx basirei*, Brazil, SCHAUS, p. 289, P. Z. S. 1892 (figured, SCHAUS, American Lep. pl. iii, fig. 5), n. sp.
- Tamphana*, n. g., *Bombyciidae*, for *T. marmorea*, n. sp., Brazil; SCHAUS, p. 325, P. Z. S. 1892.
- Tantura*, n. n. for *Penthtria*, Edw.; KIRBY, p. 86, Cat. Lep. Het. i.
- Tarchon minois*, Brazil, SCHAUS, p. 325, P. Z. S. 1892, n. sp.
- Tasema longipennis*, p. 236, *nigra*, p. 237, Burma, HAMPSON, Moths of India, i, n. spp.
- Teara erebodes*, Centr. Australia, LOWER, p. 14, Tr. R. Soc. S. Austr. xvi; *T. togata, fimbriata*, Queensland, LUCAS, p. 285, P. Linn. Soc. N.S.W. (2) vi : n. spp.
- Telea aurelia*, Mexico, DRUCE, p. 278, Ann. N. H. (6) ix, n. sp.
- Teracotona clara*, E. Africa, HOLLAND, Ent. xxv (Supp.), p. 92, n. sp.

- Termessa xanthomelas*, S. Australia, LOWER, p. 6, Tr. R. Soc. S. Austr. xv, n. sp.
- Tetraphleps*, n. g., type *brevilinea*, Wlk.; HAMPSON, p. 383, Moths of India, i.
- Teucer*, n. n. *Telioneura*, Feld.; KIRBY, p. 165, Cat. Lep. Het. i.
- Teulisma plagiata*, pl. iii, fig. 11, *chiloides*, pl. iv, fig. 10, figured; SWINHOE, Cat. Lep. Oxford.
- Theages vestalis*, Peru, SCHAUS, p. 278, P. Z. S. 1892 (figured, SCHAUS, American Lep. pl. i, fig. 23); *T. nubilosa*, *manona*, Loja, DOGNIN, Le Nat. 1892, p. 144 : n. spp.
- Thyrassia inconcinna*, Lizard I., SWINHOE, p. 55, Cat. Lep. Oxford, n. sp.
- Ticera*, n. g., *Lasiocampula*, for *T. castanea*, n. sp., Philippines; SWINHOE, p. 269, Cat. Lep. Oxford.
- Ticilia argentilinea*, figured, pl. vii, fig. 13, Cat. Lep. Oxford.
- Titya fumida*, p. 321, *argentata*, p. 322, Brazil, SCHAUS, P. Z. S. 1892, n. spp.
- Trabala cicur*, *brumalis*, Brazil, *drucei*, *cebrenis*, Mexico, SCHAUS, p. 323, P. Z. S. 1892, n. spp.
- Trabaloides*, n. n. for *Protopogenes*, Saalm.; KIRBY, p. 818, Cat. Lep. Het. i.
- Trichata*, n. g., for *Syntomis teneiformis*, Wlk.; SWINHOE, p. 52, Cat. Lep. Oxford.
- Trichomelia celenna*, Brazil, SCHAUS, p. 283, P. Z. S. 1892 (figured, SCHAUS, American Lep. pl. ii, fig. 5), n. sp.
- Trichura cyanea*, Brazil, SCHAUS, p. 276, P. Z. S. 1892, n. sp.
- Triplophleps*, n. g., type *inferna*, Swinh.; HAMPSON, p. 393, Moths of India, i.
- Tristania*, n. n. for *Zonosoma*, Butl.; KIRBY, p. 423, Cat. Lep. Het. i.
- Tropæa mandschurica*, Ussuri, STAUDINGER, p. 331, Romanoff Mem. vi, n. sp.
- Trypanophora fluvalis*, Burma; HAMPSON, p. 250, Moths of India, i, n. sp.
- Urocoma baliolalis*, N. S. Wales, SWINHOE, p. 215, pl. vi, fig. 7, Cat. Lep. Oxford, n. sp.
- Uropygia meticolodina*, larva figured, pl. iv, fig. 8, noticed, p. 344, STAUDINGER, Romanoff Mem. vi.
- Vipsania frigida*, Mexico, SCHAUS, p. 323, P. Z. S. 1892, n. sp.
- Virbia varians*, p. 284, *parva*, p. 285, Peru, SCHAUS, P. Z. S. 1892 (figured, SCHAUS, American Lep. pl. ii), n. spp.
- Xanthopilopteryx abacata*, p. 181, *lomata*, p. 182, W. Africa, KARSCH, Ent. Nachr. xviii; *X. athene*, p. 101, *minerva*, p. 103, E. Africa, WEYMER, S. E. Z. liii : n. spp.
- Zatrephes biseriata*, Plötz, systematic position queried; AURIVILLIUS, p. 196, Ent. Tidokr. xiii.
- Zebebea*, n. n. for *Nycteola*, H.-S.; KIRBY, p. 279, Cat. Lep. Het. i.
- Zeuzera pyrina*, as N. American; SMITH, p. 136, Canad. Ent. xxiv : habits in N. America; PIKE, Ins. Life, iv, p. 317.
- Z. ? regia*, Taurus, STAUDINGER, p. 253, pl. iii, fig. 6, Deutsche e. Z. Lep.; *Z. congerens*, Australia, SWINHOE, p. 282, pl. viii, fig. 5, Cat. Lep. Oxford; *Z. ramosa*, Brazil, SCHAUS, p. 329, P. Z. S. 1892 : n. spp.

- Zonosoma*: cf. *Tristania*, p. 249, and *Geometridæ*, p. 273.  
*Zutulba*, n. n. for *Anteris*, Wallengr. ; KIRBY, p. 80, Cat. Lep. Het. i.  
*Zygana niphona*, Butl., = (*christophi*, Stgr.); STAUDINGER, p. 251, Romanoff Mem. vi. *Z. cynara*, n. var. *turatii*; STANDFUSS, p. 368, MT. Schw. ent. Ges. viii. *Z. rhadamanthus*, n. var. *roederi*; STAUDINGER, p. 247, Deutsche s. Z. Lep. iv.  
*Z. sardoa*, Sardinia, MABILLE, p. cl, Bull. Soc. Ent. Fr. lxi; *Z. octo*, Transvaal, *holoxanthina*, Kitui, MABILLE, p. cxxxviii, Bull. Soc. Ent. Fr. lxi; *Z. erythrosoma*, E. India, HAMPSON, p. 231, Moths of India, i : n. spp.  
*Zygenopsis*, n. g. for *Z. fuscimarginalis*, Dorey, p. 61, *flavibasis*, K&L, p. 62, n. spp.; SWINHOE, Cat. Lep. Oxford.

## CYMATOPHORIDÆ.

[Cf. HAMPSON (384), STAUDINGER (779).]

- Gaurena aurofasciata*, p. 181, *fuscescens*, *lichenæa*, p. 182, India, HAMPSON, Moths of India, i, n. spp.  
*Habrosyne argenteipunctata*, Sikkim, HAMPSON, Moths of India, i, p. 179, n. sp.  
*Kerala*: generic characters; STAUDINGER, p. 381, Romanoff Mem. vi.  
*Nemacerota*, n. g., type *cinerea*, Warren; HAMPSON, p. 185, Moths of India, i.  
*Polyplocu anguligera*, p. 183, *albibasis*, p. 184, India, HAMPSON, Moths of India, i, n. spp.  
*Toxoides*, n. g., p. 185, for *T. longipennis*, n. sp., Sikkim, p. 186, HAMPSON, Moths of India, i.

## NOCTUIDÆ.

- [Cf. ALPHÉRAKY (4, 779), AURIVILLIUS (23, 26), BUTLER (141, 142, 144, 145), DISTANT (216), DOGNIN (220), GRAESER (356, 357), HOLLAND (408), LUCAS (568, 569), MALLY (577), OLLIFF (654), POUGADE (702), RÜHL (790), SKINNER & MENGEL (850), SMITH (861, 862, 863, 867), STANDFUSS (779), STAUDINGER (779, 886, 890, 891), TUTT (955).]  
 Criticism of Butler's synonymy of N. American *Noctuidæ*; SMITH, Ent. xxv, p. 2.  
 Note on the points available for generic characters; SMITH, Ent. xxv, pp. 101-105.  
 Number of subdivisions; GROTE, Canad. Ent. xxiv, p. 17.  
 TUTT has published the second vol. of his work on the variation of British *Noctuidæ*.  
*Acantholipes* (sub *Hydrelia*) *circumdatus*, Wlk., = (*Docela vetustalis*, Wlk.); BUTLER, Ent. xxv, p. 141.  
*Acherdoa ferraria*, Wlk., = (*Varina ornata*, Neum.); SMITH, p. 135, Canad. Ent. xxiv.

- Acontia delecta*, full-grown larva; BEUTENMÜLLER, p. 68, Bull. Am. Mus. iv. *A. gratiosa*, Wallengr., = (*luteola*, Saalm.); SNELLEN, p. 77, Tijdschr. Ent. xxxv.
- Ædia*, Hb., = (*Anophia*, Gn.); BUTLER, p. 213, Ent. xxv.
- Acronycta*: structural details of larvæ and pupæ of British species, continued by CHAPMAN, in Ent. Rec. iii, pp. 1, &c., pls. iv & vi. *A. dactylina*, full-grown larva; BEUTENMÜLLER, p. 77, Bull. Am. Mus. iv. *A. alni*, use of hairs; FITZ-GIBBON, Ent. xxv, p. 39.
- A. terrigena*, Amurland, GRAESER, p. 214, Berl. Ent. Zeit. xxxvii, n. sp.
- Agrophila sulphuralis*, = (*Erastria pardalina*, Wlk.); BUTLER, p. 91, Ent. xxv.
- Agrotis sepulcralis*, pl. ii, fig. 2, *degeniata*, var. *aucta*, fig. 3, *pæcila*, fig. 4, *characteristica*, pl. i, fig. 9, figured; Romanoff Mem. vi. *A. festiva*, n. var. *thulei*, *glareosa*, n. var. *edda*, *depuncta*, p. 266, *renigera*, p. 268, varr. described; STAUDINGER, Deutsche e. Z. Lep. iv. *A. pachnoboides*, pl. vi, fig. 3, *militaris*, fig. 5, *nigricostata*, fig. 6, *præcurrens*, fig. 7, figured; STAUDINGER, Romanoff Mem. vi.
- A. suecica*, Sweden, AURIVILLIUS, Nordens Fjärilar, pp. 113 & 121; *A. amasæna*, Amasia, p. 267, *hæljina*, Taurus, p. 270, *mollis*, Margelan, p. 271, STAUDINGER, Deutsche e. Z. Lep. iv; *A. honesta*, p. 354, pl. iii, fig. 3, *albivenata*, fig. 4, p. 359, *præcipua*, fig. 5, p. 360, *trifurcula*, fig. 6, p. 362, Siberia, STAUDINGER, op. cit. v; *A. vidua*, p. 409, pl. vii, fig. 3, *umbra*, p. 411, Amurland, STAUDINGER, Romanoff Mem. vi; *A. nigrita*, p. 217, *cicatricosa*, p. 218, *coturnicola*, p. 219, *lapidosa*, p. 220, E. Siberia, GRAESER, Berl. Ent. Zeit. xxxvii; *A. dulcis*, Centr. Asia, ALPHERAKY, Hor. Ent. Ross. xxvi, p. 444: n. spp.
- Ala pretiosa*, Central Asia, ALPHERAKY, p. 454, Hor. Ent. Ross. xxvi, n. sp.
- Alamis subcinerea*, Snell., = (*albangula*, Saalm.); SNELLEN, p. 79, Tijdschr. Ent. xxxv.
- Allostria amica*, Hb., = (*lineella*, Gr.); BUTLER, p. 214, Ent. xxv.
- Ammoconia vetula*, var. *mediorhenana*; FUCHS, p. 91, JB. nass. Ver. xlv.
- Amyna selenampha*, Gn., = (*paradoxa*, Saalm.); SNELLEN, p. 75, Tijdschr. Ent. xxxv.
- Anarta besta*, Greenland, SKINNER, P. Ac. Philad. 1892, p. 158, n. sp.
- Anartomorpha*, n. g., near *Anarta*, for *A. potunini*, n. sp. (China?), pl. ii, fig. 8; ALPHERAKY, p. 39, Romanoff Mem. vi.
- Anchocelis litura*, food-plant; JEFFREY, Ent. M. M. xxviii, p. 47.
- Anophia leucomelas*, L., = (*discistriga* and *trispilosa*, Saalm.); SNELLEN, p. 80, Tijdschr. Ent. xxxv.
- Antha*, n. g., near *Chloantha*, for *A. pretiosa*, n. sp., Amurland, pl. vii, fig. 6; STAUDINGER, p. 448, Romanoff Mem. vi.
- Anthophila*: note on use of the name; SNELLEN, p. 78, Tijdschr. Ent. xxxv.
- Apamea dumerilii*, varr. described; STAUDINGER, p. 284, Deutsche e. Z. Lep. iv.



- Aplectoides caliginea*, figured, pl. vi, fig. 9, Romanoff Mem. vi.
- Aporphyla haasi*, Spain, STAUDINGER, p. 280, Deutsche e. Z. Lep. iv, n. sp.
- Argiva* and *Patula*, peculiarity of neuration and glandular organs; HAMPSON, P. Z. S. 1892, p. 193.
- Arzama*: the name is more recent than *Bellura*, Wlk.; SMITH, p. 135, Canad. Ent. xxiv.
- Audea*: *Phoberia catocala*, Feld., referred to, p. 214, *A. bipunctata*, Wlk. = (*P. fatua*, Feld.), p. 213; BUTLER, Ent. xxv.
- Aventina*, n. g., p. 605 (? same as *Aventiola*), for *A. costimacula*, pl. xiv, fig. 4, p. 604, *solitaria*, fig. 5, p. 605, n. spp., Amurland; STAUDINGER, Romanoff Mem. vi.
- Aventiola*, n. g., near *Aventia*, for *A. maculifera*, n. sp., Amurland, pl. xiv, fig. 3; STAUDINGER, p. 602, Romanoff Mem. vi.
- Bagada* (sub *Acontia*) *plumbata*, Butl., = (*Marimatha freda*, Sw.). *B. spiceu*, Gn. = (*Acontia firina*, Sw.); BUTLER, p. 90, Ent. xxv.
- Bellura gortynoides*, Wlk., = (*Arzama densa*); SMITH, p. 135, Canad. Ent. xxiv.
- Berresa*, Wlk., = (*Pterotholix*); BUTLER, p. 11, Ent. xxv.
- Boletobia cognata*, Amurland, STAUDINGER, p. 606, Romanoff Mem. vi, n. sp.
- Brada curvilinea*, Amurland; STAUDINGER, p. 553, pl. ix, fig. 12, Romanoff Mem. v.
- Bryophila tabora*, Aintab, p. 264, *paulina*, Jerusalem, p. 265, STAUDINGER, Deutsche e. Z. Lep. iv; *B. roderi*, Kurdistan, STANDFUS, p. 665, pl. xv, fig. 4, Romanoff Mem. vi; *B. glauca*, p. 394, pl. v, fig. 8, *albonotata*, fig. 9, p. 396, *B. ?* (*Bryomoia*) *melachlora*, fig. 10, p. 397, Amurland, STAUDINGER, t. c.; *B. confucii*, p. 19, pl. i, fig. 2, *chloromixta*, p. 21, pl. ii, fig. 1, China, ALPHÉRAKY, t. c. : n. spp.
- Bryophilina*, n. g., near *Bryophila*, for *B. blandula*, n. sp., Amurland, pl. v, fig. 11; STAUDINGER, p. 398, Romanoff Mem. vi.
- Culliodes pretiosissima*, E. Africa, HOLLAND, Ent. xxv (Supp.), p. 94, n. sp.
- Calorampa brucei*, Colorado, SMITH, p. 252, Ent. News, iii, n. sp.
- Culymnia*, Hb., = (*Elyptron*, Saalm.); SNELLEN, p. 76, Tijdschr. Ent. xxxv. *C. picta*, pl. x, fig. 2, *moderata*, fig. 1, figured, Romanoff Mem. vi.
- Cupnodes trifasciata*, Moore, = (*alboguttata*, Heyd.); SNELLEN, Tijdschr. Ent. xxxv, p. 82.
- Curadrina vicina*, varr. described; STAUDINGER, p. 294, Deutsche e. Z. Lep. iv. *C. funesta*, fig. 10, *maurella*, fig. 9, *illustrata*, fig. 11, figured, pl. viii, Romanoff Mem. vi.
- C. (Amphidrina) agrotina*, Amasia, p. 293, pl. iii, fig. 11, STAUDINGER, Deutsche e. Z. Lep. iv, n. sp.
- Catocala*: synonymic notes; BUTLER, Ent. xxv, pp. 283-285: synonymy of some N. American; HULST, p. 74, Canad. Ent. xxiv, and FRENCH, p. 19, t. c. *C. lineella* and *alabamæ*, synonymical note; GROTE, p. 155, Canad. Ent. xxiv. *C. deuteronympha*, pl. xii, fig. 2, *agitatrix*, fig. 3,

- serenides*, pl. xi, fig. 6, *dærriesi*, fig. 8, *greyi*, fig. 7, *streckeri*, fig. 9, figured, Romanoff Mem. vi. *C. elocuta*, n. var. *locuta*; STAUDINGER, p. 327, Deutsche e. Z. Lep. iv. *C. illecta*, preparatory stages; FRENCH, p. 307, Canad. Ent. xxiv. *C. stretchii*, early stages; FRENCH, p. 229, t. c. *C. electa*, *sponsa*, colour variation of larvæ; POULTON, Tr. E. Soc. 1892, p. 300. *C. nupta* and *fraxini*, variation in colour of larvæ; GOULD, pp. 219-234, Tr. E. Soc. 1892.
- C. remissa*, p. 328, pl. iv, fig. 10, *contemnenda*, p. 329, fig. 11, *æstimabilis*, p. 330, fig. 12, Turkestan, STAUDINGER, Deutsche e. Z. Lep. iv; *C. hetera*, p. 592, pl. xii, fig. 4, *eminens*, fig. 5, p. 594, Amurland, STAUDINGER, Romanoff Mem. vi : n. spp.
- Chamyris cerintha*, full-grown larva; BEUTENMÜLLER, p. 78, Bull. Am. Mus. iv.
- Chara*, n. g., near *Thalpochara*, for *C. albosignata*, pl. xiv, fig. 2, p. 559, *bimaculata*, p. 561, n. spp., Amurland; STAUDINGER, Romanoff Mem. vi.
- Chariclea erubescens*, Amurland, GRAESER, p. 229, Berl. Ent. Zeit. xxxvii; *C. hedemanni*, Amurland, STAUDINGER, p. 552, Romanoff Mem. vi; *C. sanguinata*, Brisbane, LUCAS, p. 254, P. Linn. Soc. N.S.W. (2) vii : n. spp.
- Charidea v-brunneum*, Gn., = (*Appana rosacea*, Saalm.) ; SNELLEN, p. 76, Tijdschr. Ent. xxxv.
- Chobata discalis*, Wlk., = (*Erastria concludens*, Wlk.) ; BUTLER, p. 65, Ent. xxv.
- Cirrædia zerampelina*, varr. described; STAUDINGER, p. 299, Deutsche e. Z. Lep. iv.
- Clavipalpula*, n. g. for *Tæniocampa aurariæ*, Oberth.; STAUDINGER, p. 499, Romanoff Mem. vi.
- Cleophana pauli*, Jerusalem, STAUDINGER, p. 306, Deutsche e. Z. Lep. iv, n. sp.
- Cocytodes modesta* and *polygrapha*, synonymy; BUTLER, Ent. xxv, p. 212.
- Copipanolis borealis*, *fasciata*, N. America, SMITH, p. 62, P. U. S. Nat. Mus. xv, n. spp.
- Cosmia trapezoides*, figured, pl. ix, fig. 7, Romanoff Mem. vi.
- C. regina*, Amasia, STAUDINGER, p. 297, Deutsche e. Z. Lep. iv, n. sp.
- Cucullia maculosa*, figured, pl. x, fig. 4, Romanoff Mem. vi. *C. cyrtuna*, figured; MABILLE & VUILLOT, pl. xi, fig. 3, Nov. Lep. Monograph of the N. American species; SMITH, P. U. S. Nat. Mus. xv, pp. 33-52, pl. ii.
- C. similis*, *obscurior*, p. 41, *dorsalis*, p. 47, *bistriga*, p. 48, *cinderella*, p. 49, N. America, SMITH, P. U. S. Nat. Mus. xv; *C. umbristriga*, Central Asia, ALPHÉRAKY, p. 452, Hor. Ent. Ross. xxvi; *C. sublutea*, p. 312, *hemidiaphana*, p. 313, Central Asia, GRAESER, Berl. Ent. Zeit. xxxvii; *C. distinguenda*, Siberia, STAUDINGER, p. 368, pl. iii, fig. 7, Deutsche e. Z. Lep. v : n. spp.
- Curvatula*, n. g., near *Aventia*, for *C. pallicostata*, n. sp., Amurland, pl. xii, fig. 6; STAUDINGER, p. 601, Romanoff Mem. vi.

- Dasygaster hollandia*, Gn., = (*leucanioides*, Gn., and *Grophiphora facili* Wlk.), *D. epundoides*, Gn., = (*punctiverna*, Wlk.); BUTLER, p. 1 Ent. xxv.
- Dasypolia templi*, n. var. *caftischli*; RÜHL, p. 170, Soc. Ent. vi.
- D. ferdinandi*, Stiltner Jooh, RÜHL, Soc. Ent. vi, p. 169; *D. pagodgerbillus*, Central Asia, ALPHÉRAKY, p. 452, Hor. Ent. Ross. xiv
- D. ? fani*, Amurland, STAUDINGER, p. 522, pl. ix, fig. 10, Romanoff Mem. vi : n. spp.
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- Dianthascia filigrama*, n. var. *melanockroa*; STAUDINGER, p. 273, Deutsche Z. Lep. iv.
- D. musculina*, Malatia, STAUDINGER, p. 272, Deutsche e. Z. Lep. iv; *deliciosa*, *lurida*, Central Asia, ALPHÉRAKY, p. 446, Hor. Ent. Ross. xxvi : n. spp.
- Dicopis*: revision of the N. American; SMITH, P. U. S. Nat. Mus. : pp. 53 & 68. *D. viridescens*, Wlk., = (*muralis*, Grt.): *Psaphis resumens*, Wlk., is the same; SMITH, p. 135, Canad. Ent. xxiv.
- Drasteria erichto*, note on; SLINGERLAND, Ent. News, iii, p. 63.
- Dryobola contermina*, Central Asia, GRAESER, p. 308, Berl. Ent. Zeit. xxxvii; *D. ? amurensis*, Ussuri, STAUDINGER, p. 432, pl. vii, fig. Romanoff Mem. vi : n. spp.
- Dyschorista* (sub *Cerastis*) *prodeuna*, Wlk., = (*Taniocampa pueri* Grote); BUTLER, p. 10, Ent. xxv.
- D. conlecta*, Central Asia, GRAESER, p. 310, Berl. Ent. Zeit. xxxvii, n.
- Eccopteroma*, n. g., for *Calymnia fulcata*, Graeser; STAUDINGER, p. 5 Romanoff Mem. vi.
- Eicomorpha ? argillacea*, Amdo, ALPHÉRAKY, p. 445, Hor. Ent. Ross. xxvi, n. sp.
- Eliochea chrysochlora*, Wlk., = (*Amphipyra laportei*, Feld.); BUTLER, Ent. xxv, pp. 285 & 286.
- Epimecia subtilis*, pl. xi, fig. 4, *quadrivirgula*, fig. 5, figured; MABILLÉ VUILLLOT, Nov. Lep.
- Episema lederi*, varr. described; STAUDINGER, pp. 274-276, Deutsche Z. Lep. iv.
- Epunda muscosa*, Amasia, STAUDINGER, p. 281, Deutsche e. Z. Lep. n. sp.
- Erastria wisikotti*, pl. xi, fig. 4, *numisma*, fig. 3, *distinguenda*, fig. 4, fig. Romanoff Mem. vi.
- E. staudingeri*, Kurdistan, STANDFUS, p. 667, pl. xv, fig. 7, Romanoff Mem. vi, n. sp.
- Erebus odorata*, = (*marquesii*, Phil.); REED, p. 68, Act. Soc. Chili, i.
- Eriopus venus*, figured, pl. viii, fig. 6, Romanoff Mem. vi.
- Erygia apicalis*, numerous synonyms of; BUTLER, Ent. xxv, p. 213.
- Erythrophania*, n. g. for *Chariclea ? eudoxia*, n. sp., Kashgar, pl. iv, fig. STAUDINGER, p. 316, Deutsche e. Z. Lep. iv.

- Eublemma* (sub *Micra*) *hemirhoda*, Wlk., = (*Anthophila roseifascia*, Wlk.); BUTLER, Ent. xxv, p. 189.
- Eumestla* (sub *Thalporchares*) *patula*, Mor., = (*Tarache patruelis*, Gr., and *Anthophila flammicincta*, Wlk.); BUTLER, p. 189, Ent. xxv.
- Euplexia* *græseri*, Amurland, STAUDINGER, p. 462, Romanoff Mem. vi, n. sp.
- Eurhipia* *bouckeri*, Feld., = (*Eutelia exquisita*, Saalm.); SNELLEN, p. 78, Tijdschr. Ent. xxxv.
- E. adoratrix*, STAUDINGER, p. 308, Deutsche e. Z. Lep. iv, n. sp.
- Euromoia*, n. g. of doubtful position, for *E. mixta*, n. sp., Amurland, pl. xii, fig. 10; STAUDINGER, p. 632, Romanoff Mem. vi.
- Eutolype* *bombyciformis*, Ohio, SMITH, p. 59, P. U. S. Nat. Mus. xv, n. sp.
- Fodina* *ostorius*, figured; SCOTT, Austral. Lep. ii, pl. xviii.
- F. gloriosa*, Queensland, LUCAS, p. 304, P. Linn. Soc. N.S.W. (2) vi, n. sp.
- Fruva* (sub *Xanthodes*) *parvula*, Wlk., = (*georgica*, Gr.); BUTLER, p. 91, Ent. xxv.
- Gonitis* *editrix*, Gn., = (*fratiterra* and *cosmioides*, Wlk.), *G. sabulifera*, Gn., = (*involuta*, var., G., and *basalis*, Wlk., *Tiridata colligata*, Wlk., and *G. propinqua*, Butl.); BUTLER, p. 11, Ent. xxv. *G. fulvida*, Gn., complex synonymy; BUTLER, t. c., p. 12.
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- Graphiphora* *lichenodes*, E. Siberia, GRAESER, p. 216, Berl. Ent. Zeit. xxxvii, n. sp.
- Grumia*, n. g., near *Heliothis* for *G. flora*, n. sp., Amdo; ALPHÉRAKY, p. 453, Hor. Ent. Ross. xxvi.
- Hadena* *monoglypha*, n. var. ? *polyglypha*; STAUDINGER, p. 286, Deutsche e. Z. Lep. iv. *H. fraudulenta*, pl. viii, fig. 5, *dorriesi*, fig. 4, figured; Romanoff Mem. vi.
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- Hadjina*, n. g. (*Segetia*) for *H. lutosa*, n. sp., Asia Minor; STAUDINGER, p. 286, Deutsche e. Z. Lep. iv.
- Hamodes* *simplicia*, W. Africa, WEYMER, p. 116, S. E. Z. liii, n. sp.
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- Heliophobus* *scillæ*, ♀ noticed; CHRÉTIEN, Le Nat. 1892, p. 7.
- H. hirsutus*, Asia Minor, p. 277. *H. ? discrepans*, Jerusalem, p. 278, STAUDINGER, Deutsche e. Z. Lep. iv; *H. grumi*, *anachoretoides*, Central Asia, ALPHÉRAKY, p. 447, Hor. Ent. Ross. xxvi : n. spp.
- Heliothis* *armigera*, notes on; MALLY, Bull. Dep. Agric. Ent. xxvi, pp. 45-56.
- Hepatica*, n. g. of doubtful position, for *H. anceps*, n. sp., Amurland, pl. xii, fig. 11; STAUDINGER, p. 634, Romanoff Mem. vi.
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- licra rosita*, Gn., = (*derogata*, Wlk.); BUTLER, p. 141, Ent. xxv.
- liselia oxyacanthæ*, varr. described; STAUDINGER, p. 283, Deutsche e. Z. Lep. iv.
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- lipista* (sub *Diastema*) *tigris*, Gn., = (*lineata*, Wlk.); BUTLER, p. 11, Ent. xxv.
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- phideres princeps*, Gn., is not *princeps*, Boisd., and should be called *Halastus intricatus*; BUTLER, p. 375, Ann. N. H. (6) ix.
- phiodes parcemacula*, Queensland, LUCAS, p. 304, P. Linn. Soc. N.S.W. (2) vi, n. sp.
- phisma pretorice*, Transvaal, DISTANT, p. 239, pl. ii, fig. 7, Naturalist Transvaal, n. sp.

- Ophiusa myope, frontina, senex*, figured; SCOTT, Austral. Lep. ii, pl. xvi.  
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- Perigea conducta*, = (*Caradrina consocia*, Wlk.); BUTLER, p. 11, Ent. xxv. *P. xanthioides*, larval stages; BEUTENMÜLLER, p. 69, Bull. Am. Mus. iv.
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- Polia rebecca*, Jerusalem, STAUDINGER, p. 282, Deutsche e. Z. Lep. iv; *P. mirafloresa*, Loja, DOGNIN, p. 185, Le Nat. 1892: n. spp.
- Præstilibia*, n. g. for *P. armeniaca*, n. sp., Amasia; STAUDINGER, p. 288, Deutsche e. Z. Lep. iv.
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- Prionoptera serraoides*, Loja, DOGNIN, p. 85, Le Nat. 1892, n. sp.
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- Rancora*, n. g., for *R. strigata*, n. sp., N. America; SMITH, p. 253, Ent. News, iii.
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- Toxocampa emaculata*, *E. Siberia*, GRAESER, p. 231, *Berl. Ent. Zeit.* xxxvii, n. sp.
- Trachea similis*, *Amurland*; STAUDINGER, p. 456, pl. ix, fig. 1, *Romanoff Mem.* iv, n. sp.
- Trigonophora grumi*, *Central Asia*, ALPHÉRAKY, p. 449, *Hor. Ent. Ros.* xxvi, n. sp.
- Ulochlœna superba*, *Central Asia*, ALPHÉRAKY, p. 447, *Hor. Ent. Ros.* xxvi, n. sp.
- Valeria ? sauberti*, *E. Siberia*, GRAESER, p. 223, *Berl. Ent. Zeit.* xxiv, n. sp.
- Varnia fenestrata*, *Laos*, POUJADE, p. 270, pl. xi, fig. 6, *N. Arch. Mus. Paris* (3) iii, n. sp.
- Virgo*, n. g. for *Nonagria amana*, Stgr., figured, pl. viii, fig. STAUDINGER, p. 467, *Romanoff Mem.* vi.
- Xanthia divergens*, Butl., figured, pl. ix, fig. 8, *Romanoff Mem.* vi.
- Xylina ledereri*, *Rhodus*, STAUDINGER, p. 304, *Deutsche e. Z. Lep.* iv; *brachyptera*, *Amurland*, STAUDINGER, p. 520, pl. ix, fig. 9, *Romanoff Mem.* vi: n. spp.
- Xylomiges*: the *N. American species* revised; SMITH, pp. 65-78, pl. *P. U. S. Nat. Mus.* xii.
- X. peritalis*, p. 69, *ochracea*, p. 75, *N. America*; SMITH, *P. U. S. Nat. Mus.* xv, n. spp.
- Xylomoia*, n. g., near *Chloantha*, for *X. separata*, n. sp., *Amurland*, pl. fig. 8; STAUDINGER, p. 451, *Romanoff Mem.* viii.
- Zalissa*, Wlk., referred to *Agaristidae*, (= *Seudyra*, Stretch.); BUTL. *Ent.* xxv, p. 214.

## DELTOIDIDÆ.

- [Cf. ALPHÉRAKY (779), BUTLER (143), DISTANT (216), LUCAS (5 POUJADE (702), STAUDINGER (779, 886).]
- Bocana flavopunctalis*, *Laos*, POUJADE, p. 275, pl. xi, fig. 10, *N. A. Mus. Paris* (3) iii, n. sp.
- Bomolocha rhombalis*, figured, pl. ii, fig. 10, *Romanoff Mem.* vi.
- B. bipartita*, *Amurland*, STAUDINGER, p. 625, pl. xiv, fig. 12, *Romanoff Mem.* vi, n. sp.
- Episeuxis æthiops*, *Transvaal*, DISTANT, p. 239, pl. ii, fig. 2, *Natur. Transvaal*, n. sp.
- Gynæphila*, n. g., near *Hypenodes*, for *G. maculifera*, n. sp., *Amurland*, pl. xiv, fig. 13; STAUDINGER, p. 629, *Romanoff Mem.* vi.
- Helia curvipalpalis*, Butl., (= *quadra*, Grace.); STAUDINGER, p. *Romanoff Mem.* vi.
- Hermينيا semicircularis*, *Brisbane*, LUCAS, p. 260, *P. Linn. Soc. N.S.W.* (2) vii, n. sp.

- Hollandia*, n. g., p. 295, for *H. sigillata*, n. sp., W. Africa, p. 296 ; BUTLER, Ann. N. H. (6) x.
- Hypena conspersalis*, figured, pl. xiii, fig. 10, Romanoff Mem. vi ; *H. ravalis*, varr. described ; STAUDINGER, p. 334, Deutsche e. Z. Lep. iv.
- H. mardinalis*, Asia Minor, STAUDINGER, p. 336, Deutsche e. Z. Lep. iv, n. sp.
- Nodaria amurensis*, figured, pl. xiii, fig. 1, Romanoff Mem. vi.
- Pangrapta marmorata*, pl. xiii, fig. 5, *incisa*, fig. 6, *flavomacula*, fig. 7, *suaveola*, fig. 8, *costemacula*, fig. 9, figured, Romanoff Mem. vi.
- Pangrapta griseola*, Amurland, STAUDINGER, p. 620, pl. xiv, fig. 11, Romanoff Mem. vi, n. sp.
- Pechipogon ? grandis*, China, ALPHÉRAKY, p. 49, pl. ii, fig. 11, Romanoff Mem. vi, n. sp.
- Rivula unctalis*, Amurland, STAUDINGER, p. 631, Romanoff Mem. vi, n. sp.
- Zanclognatha fumosa*, pl. xiii, fig. 2, *robiginosa*, fig. 3, *bistrigata*, fig. 4, figured, Romanoff Mem. vi.
- Z. cristulalis*, p. 610, pl. xiv, fig. 7, *violaceulis*, fig. 6, p. 612, *umbrosalis*, fig. 8, p. 613, *Z. ? helialis*, fig. 9, p. 615, *obliqua*, fig. 10, p. 616, Amurland, STAUDINGER, Romanoff Mem. vi, n. spp.

## GEOMETRIDÆ.

[Cf. ALPHÉRAKY (4, 779), BUTLER (141), DISTANT (216), DOGNIN (220), DRUCE (225, 347), FUCHS (313), GRAESER (356, 357), GUMPPENBERG (380), HEYLAERTS (403), HOLLAND (408), KLEMENSIEWICZ (499), LOWER (565), LUCAS (568, 569), MEYRICK (603, 604, 605), POUJADE (702), RÖBER (767), SKINNER & MENGEL (850), STANDFUSS (779), STAUDINGER, (886, 887, 890, 891), STEINERT (897), SWINHÖE (909), THIERRY-MIEG (923), WEYMER (1003).]

Classification of the *Geometrinæ* of Europe ; they are divided into six families and 117 genera, of which the characters are given ; MEYRICK, Tr. E. Soc. 1892, pp. 53-140.

The classifications of Meyrick and Gumpfenberg discussed and criticised, many remarks on generic nomenclature ; REBEL, S. E. Z. liii, pp. 247-268.

Colour variation in larvæ ; POULTON (703).

*Abraxas khasiana*, Khasia Hills, SWINHÖE, p. 17, Tr. E. Soc. 1892 ; *A. subhyalinata*, Flores, RÖBER, p. 333, Tijdschr. Ent. xxxiv (fig. in xxxv) : n. spp.

*Achlora gaujoniaria*, Ecuador, DOGNIN, p. 186, Le Nat. 1892, n. sp.

*Acidaliu lumenaria*, Hb., = (*Zanclopteryx zincaria*, Gn.) ; SNELLEN, p. 20, Tijdschr. Ent. xxxv. *A. privata*, fig. 23, *calidata*, fig. 24, figured, pl. lii, Biol. Centr. Am. Heter. ii. *A. pallidata*, larva described ; HABICH, p. 161, S. E. Z. liii. *A. luridata*, metamorphoses ; REBEL, p. 518, Verh. z.-b. Wien, xlii.

- A. bicertaria*, Tunisia, STAUDINGER, p. 290, Deutsche e. Z. Lep. v ; *A. subochruria*, Central Asia, p. 144, *fasciata*, Syria, p. 145, *striolata*, Beyrout, p. 146, pl. ii, fig. 5, *incisaria*, fig. 6, p. 147, Spain, *nocturna*, p. 148, *sartharia*, p. 149, *tristriata*, p. 150, *effeminata*, p. 151, Central Asia, *completa*, Algeria, p. 152, *lutulentaria*, Spain, p. 153, *grisescens*, p. 155, *annubiata*, p. 156, Central Asia, STAUDINGER, Deutsche e. Z. Lep. v ; *A. latelineata*, Central Asia, GRAESER, p. 316, Berl. Ent. Zeit. xxxvii ; *A. ? obrimo*, pl. lii, fig. 13, *A. cavana*, fig. 14, p. 117, *onca*, fig. 15, *celenna*, fig. 16, *A. ? enona*, fig. 17, *A. carna*, fig. 18, p. 118, *nurnica*, fig. 19, *olmia*, fig. 20, p. 119, *casoca*, fig. 21, *catenes*, fig. 22, p. 120, *A. ? numitoria*, fig. 25, *carmenta*, fig. 26, p. 121, *A. ? ocrissa*, fig. 27, *A. nycteis*, fig. 28, *odrussa*, fig. 29, p. 122, Central America, DRUCE, Biol. Centr. Am. Heter. ii ; *A. minuscula*, *nigroapicata*, Chiriqui, *virescens*, Colombia, *rubricolor*, *rubellula*, *nubicolor*, Cayenne, THIERRY-MIEG, p. 235, Le Nat. 1892 : n. spp.
- Acropterus luteopictata*, Laos, POUJADE, p. 274, pl. xi, fig. 9, N. Arch. Mus. Paris (3) iii, n. sp.
- Acrotomia muta*, pl. xlv, figs. 15 & 16, *polla*, figs. 17 & 18, *A. ? mucia*, figs. 19 & 20, p. 48, *A. minucia*, figs. 21 & 22, *A. ? bola*, fig. 23, *A. ?*, fig. 24, p. 49, Central America ; DRUCE, Biol. Centr. Am. Heter. ii, n. spp.
- Agathia codina*, pl. i, fig. 3, p. 7, *gemma*, p. 8, Khasia Hills, SWINHOE, Tr. E. Soc. 1892 ; *A. iodoides*, *distributa*, Queensland, LUCAS, p. 296, P. Linn. Soc. N.S.W. (2) vi : n. spp.
- Amelora*, n. g., *Selidosemida*, p. 646, for *A. goniota*, p. 647, *demistis*, p. 648, *amblopa*, p. 649, *catacris*, p. 650, *arotras*, p. 651, n. spp., Australia ; MEYRICK, P. Linn. Soc. N.S.W. (2) vi.
- Amphidasys betularia*, variation in colour of larva ; BATESON, p. 213, Tr. E. Soc. 1892. *A. superans*, Butl., referred to *Boarmia* ; GRAESER, p. 232, Berl. Ent. Zeit. xxxvii. *A. arnobia*, figured, pl. xlviii, fig. 4, Biol. Centr. Am. Heter. ii.
- Amphidasys matharma*, Central America, DRUCE, p. 71, pl. xlviii, figs. 5 & 6, Biol. Centr. Am. Heter. ii, n. sp.
- Anaitis mundata*, Beyrout, p. 216, *submundulata*, Taurus, p. 217, *musculata*, Asia Minor, pl. ii, fig. 19, p. 218, STAUDINGER, Deutsche e. Z. Lep. v, n. spp.
- Anaploides pistaciaria*, figured, pl. xlix, fig. 20, Biol. Centr. Am. Heter. ii.
- Anhibernia*, n. g. for *Hybernia* (*A.*) *orientalis*, n. sp., Syria ; STAUDINGER p. 170, Deutsche e. Z. Lep. v.
- A. buratica*, Siberia, STAUDINGER, p. 376, pl. iii, fig. 8, Deutsche e. Z. Lep. v, n. sp.
- Anisodes lichenaria*, *intermixtaria*, Khasia Hills, SWINHOE, p. 8, Tr. E. Soc. 1892 ; *A. melitia*, pl. li, fig. 3, *caletra*, fig. 4, *carbina*, fig. 5, Central America, DRUCE, p. 104, Biol. Centr. Am. Heter. ii ; *A. melanochrysus*, Loja, DOGNIN, p. 237, Le Nat. 1892 : n. spp.
- Antea canescens*, Rockhampton, LUCAS, p. 300, P. Linn. Soc. N.S.W. (2) vi, n. sp.

- Anthyria*, n. g., p. 2, type *Hyria grataria*, Wlk., with *A. iole*, n. sp., Khasia Hills, p. 3, pl. i, fig. 7 ; SWINHORE, Tr. E. Soc. 1892.
- Anticypella*, n. g. for *gigantaria*, Stgr. ; MEYRICK, p. 108, Tr. E. Soc. 1892.
- Aphrogenia*, n. subg. of *Acidalius* ; GUMPPENBERG, p. 257, N. Acta Ac. L.-C. Nat. cur. lviii.
- Apicia medusa*, pl. xlv, fig. 20, *atilla*, fig. 21, *mesada*, fig. 22, *melenda*, figg. 23 & 24, p. 39, *aurana*, fig. 25, *micca*, fig. 26, *atia*, fig. 27, *mera*, figg. 28 & 29, p. 40, *aurelia*, p. 41, pl. xlv, fig. 1, *megania*, p. 42, fig. 2, Central America, DRUCE, Biol. Centr. Am. Heter. ii, n. spp.
- Aporoctena*, n. g., *Selidosemida*, for *A. scierodes*, n. sp., Queensland ; MEYRICK, p. 622, P. Linn. Soc. N.S.W. (2) vi.
- Artemidora*, n. g. for *maracundaria*, Ersch. ; MEYRICK, p. 112, Tr. E. Soc. 1892.
- Artiora*, n. g. for *evonymaria*, Schiff. ; MEYRICK, p. 114, Tr. E. Soc. 1892.
- Asellodes laternaria*, figured, pl. li, fig. 8, Biol. Centr. Am. Heter. ii.
- Aspilates curvaria*, Evers, figured, pl. iii, fig. 5, ♀ described, p. 70 ; ALPHÉRAKY, Romanoff Mem. vi.
- A. revocaria*, Beyrout, STAUDINGER, p. 203, pl. ii, fig. 16, Deutsche e. Z. Lep. v, n. sp.
- Asthena prasina*, Khasia Hills, SWINHORE, p. 13, pl. i, fig. 10, Tr. E. Soc. 1892 ; *A. pellucida*, Brisbane, LUCAS, p. 253, P. Linn. Soc. N.S.W. (2) vii ; *A. carnana*, Mexico, pl. lii, figg. 10 & 11, *neclas*, Guatemala, p. 12, DRUCE, p. 115, Biol. Centr. Am. Heter. ii : n. spp.
- Astrapephora*, n. g., near *Ortholitha*, for *A. romanovi*, n. sp., Amdo, ALPHÉRAKY, p. 457, Hor. Ent. Ross. xxvi.
- Atomophora*, n. g., near *Lithostegia*, p. 65, for *A. falsaria*, n. sp., Ganssu, ALPHÉRAKY, p. 66, Romanoff Mem. vi.
- Azelina terrenaria*, Loja, DOGNIN, p. 106, Le Nat. 1892 ; *A. attagena*, *barbarata*, *fortunata*, Ecuador, DOGNIN, p. 186, Le Nat. 1892 ; *A. contorta*, Peru, THIERRY-MIEG, p. 217, Le Nat. 1892 ; *A. asterodia*, pl. xlvii, figg. 8 & 9, *astapa*, figg. 10 & 11, p. 62, *melissa*, fig. 12, *metella*, fig. 13, *aurunca*, fig. 14, p. 63, *micca*, figg. 15 & 16, *rumina*, figg. 17 & 18, p. 64, Central America, DRUCE, Biol. Centr. Am. Heter. ii : n. spp.
- Bessophora*, n. g., = (*Ptychoptera*, Christoph.) ; MEYRICK, p. 63, Tr. E. Soc. 1892.
- Biston hirtarius*, n. var. *kanoviensis* ; HEYMONS, p. 446, pl. xv, fig. 9, Berl. Ent. Zeit. xxxvi.
- Boarmia repandata*, n. var. *nobilis* ; ALPHÉRAKY, p. 61, Romanoff Mem. vi.
- B. ezustaria*, Siberia, STAUDINGER, p. 378, pl. iii, fig. 9, Deutsche e. Z. Lep. v ; *B. nobilitaria*, p. 173, *variolaria*, p. 174, *subrepandata*, p. 175, Central Asia, STAUDINGER, Deutsche e. Z. Lep. v ; *B. conjungens*, Amdo, ALPHÉRAKY, p. 456, Hor. Ent. Ross. xxvi ; *B. rybakovi*, Ganssu, ALPHÉRAKY, p. 61, pl. iii, fig. 4, Romanoff Mem. vi ; *B.*

- leucoptera*, Laos, POUJADE, p. 273, pl. xi, fig. 7, N. Arch. Mus. Paris (3) iii; *B. noctiluca*, pl. xlviii, fig. 7, *B. ? cubira*, fig. 8, p. 73, *B. nephalia*, fig. 10, p. 75, *brotas*, fig. 11, *nepia*, fig. 12, p. 76, Druce, Biol. Centr. Am. Heter. ii : n. spp.
- Boletobia robiginosa*, p. 332, pl. iv, fig. 13, *detersa*, p. 333, fig. 14, Asia Minor, STAUDINGER, Deutsche e. Z. Lep. iv, n. spp.
- Bonatea*, n. g., *Boarminæ*, for *Oxydia duciata*, Maassen, figured, pl. xlix, figg. 6 & 7; DRUCE, p. 82, Biol. Centr. Am. Heter. ii.
- Bronchelia subroraria*, p. xlix, fig. 1, *conjugaria*, fig. 4, *detecta*, fig. 3, figured, Biol. Centr. Am. Heter. ii.
- B. nasica*, Mexico, DRUCE, p. 81, pl. xlix, fig. 4, Biol. Centr. Am. Heter. ii, n. sp.
- Bryoptera pruna*, Loja, DOGNIN, p. 59, Le Nat. 1892; *B. (?) candara*, Panama, DRUCE, p. 80, pl. xlviii, fig. 26, Biol. Centr. Am. Heter. ii : n. spp.
- Byssodes appropriata*, figured, pl. i, fig. 25, Biol. Centr. Am. Heter. ii.
- B. miletia*, fig. 27, *navia*, fig. 26, p. 99, *nasada*, fig. 28, p. 100, Central America, DRUCE, Biol. Centr. Am. Heter. ii, n. spp.
- Caberodes axona*, pl. xlv, fig. 6, *messeme*, fig. 7, Mexico, DRUCE, p. 53, Biol. Centr. Am. Heter. ii, n. spp.
- Calothyrsanis amaturlaria*, preparatory stages; KELLCOTT, Canad. Ent. xxiv, p. 242.
- Cumbogia obada*, pl. lii, figg. 1 & 2, *numida*, fig. 3, p. 112, *occia*, fig. 4, *odatis*, fig. 5, *numeria*, fig. 6, p. 113, *nucula*, fig. 7, *cedon*, fig. 8, *C. ? necula*, fig. 9, p. 114, Central America, DRUCE, Biol. Centr. Am. Heter. ii, n. spp.
- Curphoxera ptelearia*, further notes on; RILEY, Ina. Life, v, p. 40.
- Chlenias melanozycta*, p. 633, *sonæa*, p. 665, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) vi, n. spp.
- Charodes clemitaria*, full-grown larva; BEUTENMÜLLER, p. 79, Bull. Am. Mus. iv.
- Chrysotenis*, n. g., for *filacearia*, H.-S.; MEYRICK, p. 86, Tr. E. Soc. 1892.
- Cidaria minorata*, larva described; HABICH, S. E. Z. liii, p. 160. *C. tetrica*, figured, pl. iii, fig. 11, Romanoff Mem. vi.
- C. inconsiderata*, Amasia, p. 226, *apiciata*, p. 227, *fidonaria*, p. 229, *alexandrararia*, p. 230, *interpositaria*, p. 231, *præpositaria*, p. 233, *postpositaria*, p. 234, Central Asia, *ignorata*, Caucasus, p. 235, *desperata*, p. 236, *antelataria*, p. 237, pl. ii, fig. 21, Central Asia, *numidiata*, Algeria, fig. 22, p. 239, *viduata*, Central Asia, p. 241, *sintensis*, Asia Minor, p. 242, *maerens*, p. 245, *rogata*, p. 248, *rejectaria*, p. 249, Central Asia, STAUDINGER, Deutsche e. Z. Lep. v; *C. semenovi*, p. 458, *excentricata*, with var. *virginea*, p. 459, Amdo, ALPHÉRAKY, Hor. Ent. Ross. xxvi; *C. tima*, Peru, THIERRY-MIEG, p. 217, Le Nat. 1892; *C. cinereolimitata*, Colombia, THIERRY-MIEG, p. 235, t. c.; *C. apiciflava*, *alboscripta*, Loja, DOGNIN, p. 274, Le Nat. 1892 : n. spp.
- Cimelia vaulogeri*, Tunis, STAUDINGER, p. 291, pl. iii, fig. 11, Deutsche e. Z. Lep. v, n. sp.

- Cimicodes portentosa*, Peru, THIERRY-MIEG, p. 235, Le Nat. 1892, n. sp.  
*Cleora godmani*, Mexico, DRUCE, p. 72, pl. xlviii, fig. 9, Biol. Centr. Am. Heter. ii, n. sp.  
*Cleta* ? *minuta*, Central America, DRUCE, p. 111, pl. li, fig. 30, Biol. Centr. Am. Heter. ii, n. sp.  
*Cnidia*, n. subg. of *Acidalia*; GUMPENBERG, p. 223, N. Acta Ac. L.-O. Nat. cur. lviii.  
*Comibana venezuelata*, figs. 14 & 15, *invasata*, fig. 18, pl. xlix, figured, Biol. Centr. Am. Heter. ii.  
*C. belisama*, p. 87, pl. xlix, figg. 16 & 17, *callicula*, fig. 19, p. 88, Panama, DRUCE, Biol. Centr. Am. Heter. ii; *C. ecuadorata*, Zamora, DOGNIN, p. 186, Le Nat. 1892; *C. lufayaria*, Loja, DOGNIN, p. 206, t. c. : n. spp.  
*Conosara*, n. g., *Selidosemidæ*, for *C. castanea*, n. sp., Tasmania; MEYRICK, p. 660, P. Linn. Soc. N.S.W. (2) vi.  
*Coricia bicincta*, Loja, DOGNIN, Le Nat. 1892, p. 144, n. sp.  
*Cratoptera arvina*, p. 34, pl. xlv, fig. 10, *mena*, fig. 11, *atina*, figs. 12 & 13, p. 35, Central America, DRUCE, Biol. Centr. Am. Heter. ii, n. spp.  
*Criomacha*, n. g. for *Chlenias belidearia*, Feld.; MEYRICK, p. 659, P. Linn. Soc. N.S.W. (2) vi.  
*Crocallis* ? *eduzaria*, Loja, DOGNIN, Le Nat. 1892, p. 123, n. sp.  
*Dasydia tarpeia*, Colombia, THIERRY-MIEG, p. 236, Le Nat. 1892, n. sp.  
*Dasypteroma*, n. g., near *Hibernia*, for *D. thaunasia*, n. sp., Spain, pl. ii, fig. 10; STAUDINGER, p. 168, Deutsche e. Z. Lep. v.  
*Deilinia eccentricis*, Australia, p. 635, *anias*, Tasmania, *lithodora*, p. 637, *cremias*, p. 638, *ochthadia*, p. 639, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) vi, n. spp.  
*Descoreba rosalinda*, Brazil, THIERRY-MIEG, p. 236, Le Nat. 1892, n. sp.  
*Diastictis margaritis*, Queensland, MEYRICK, p. 588, P. Linn. Soc. N.S.W. (2) vi, n. sp.  
*Dichromodes ptilomacra*, S. Australia, LOWER, p. 8, Tr. R. Soc. S. Austr. xv; *D. petrina*, New Zealand, MEYRICK, p. 216, Tr. N. Z. Inst. xxiv : n. spp.  
*Discalma*, n. g., for *Tephрина normata*, Wlk.; MEYRICK, p. 590, P. Linn. Soc. N.S.W. (2) vi.  
*Doryodes acutaria*, full-grown larva; BEUTENMÜLLER, p. 78, Bull. Am. Mus. iv.  
*Drepanodes valeria*, Peru, THIERRY-MIEG, p. 217, Le Nat. 1892; *D. moneta*, pl. xlv, fig. 2, *astanda*, fig. 3, p. 30, *asina*, fig. 4, *D. ? melina*, fig. 5, p. 31, Central America, DRUCE, Biol. Centr. Am. Heter. ii : n. spp.  
*Drymoptila*, n. g., *Selidosemidæ*, for *D. temenitis*, n. sp., Australia; MEYRICK, P. Linn. Soc. N.S.W. (2) vi, p. 670.  
*Ectropis pristis*, p. 626, *argalea*, *isombra*, p. 627, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) vi, n. spp.  
*Egea temeraria*, Central Asia, STAUDINGER, p. 196, Deutsche e. Z. Lep. vi, n. sp.

- Ellopia cinereostrigaria*, Galicia, KLEMENSIEWICZ, p. 67, SB. z.-b. Wien, xlii, n. sp.
- Ennomos bitias*, Panama, DRUCE, p. 69, pl. xlviii, figs. 1 & 2, Biol. Centr. Am. Heter. ii, n. sp.
- Eois sublectata*, figured, pl. li, figg. 18 & 19, Biol. Centr. Am. Heter. ii.
- E. ascantia*, pl. li, fig. 20, *batea*, fig. 21, *camma*, fig. 22, p. 109, *nundine*, figg. 23 & 24, *ops*, figg. 25 & 26, *cassandra*, fig. 27, *E. ? ano*, fig. 28, p. 110, *catana*, fig. 29, p. 111, Central America, DRUCE, Biol. Centr. Am. Heter. ii, n. spp.
- Ephoria*, n. g. for *arenosa*, Butl. ; MEYRICK, p. 109, Tr. E. Soc. 1892.
- Ephyra megista*, p. 101, pl. li, fig. 1, *citrina*, p. 102, fig. 2, Central America, DRUCE, Biol. Centr. Am. Heter. ii, n. spp.
- Epicompsa*, n. g., *Selidosemida*, for *E. xanthocrossa*, n. sp., S. Australia ; MEYRICK, P. Linn. Soc. N.S.W. (2) vi.
- Epifidonia fractistriga*, Gaussu, ALPHÉRAKY, p. 65, pl. iii, fig. 7, Romanoff Mem. vi, n. sp.
- Epione ? polydora*, Peru, THIERRY-MIEG, p. 235, Le Nat. 1892 ; *E. ? asteria*, p. 43, pl. xlv, figg. 3 & 4, *megamade*, p. 44, figg. 5 & 6, DRUCE, Biol. Centr. Am. Heter. ii : n. spp.
- Erateina semiluctuata*, Colombia, THIERRY-MIEG, p. 236, Le Nat. 1892 ; *E. tibicina*, Loja, DOGNIN, p. 238, Le Nat. 1892 ; *E. artemisia*, p. 97, *necyra*, *rhesa*, p. 98, *medama*, *aroma*, p. 99, *hewitsomi*, *artemis*, p. 100, *buckleyi*, *arocho*, p. 101, *meduthina*, *bossora*, p. 102, N. W. South America, *capua*, St. Catharina, *masura*, *media*, p. 103, *peloria*, *wheeleri*, p. 104, *artabates*, *faventia*, p. 105, *whitelylei*, *necysia*, p. 106, *hermaea*, *tryphosa*, p. 107, N. W. South America, DRUCE, Ann. N. H. (6) ix : n. spp.
- Eremia caelestinaria*, Central Asia, ALPHÉRAKY, p. 456, Hor. Ent. Rom. xxvi, n. sp.
- Ergavia bogotaria*, figured, pl. xlviii, fig. 20, Biol. Centr. Am. Heter. ii.
- E. calvina*, figg. 21 & 22, *caletra*, fig. 23, *assecoma*, figg. 24 & 25, Mexico, DRUCE, p. 79, pl. xlviii, Biol. Centr. Am. Heter. ii, n. spp.
- Erosiidae*, systematic position discussed ; HEYLAERTS, p. 15, Ann. Ent. Belg. xxxvi.
- Erosia incisaria*, figured, pl. liii, figg. 3 & 4, Biol. Centr. Am. Heter. ii.
- E. (Dirades) tridentata*, p. 14, *bidentata*, p. 15, Java, HEYLAERTS, Ann. Ent. Belg. xxxvi ; *E. opigena*, pl. liii, figg. 1 & 2, p. 126, *omana*, fig. 5, *cassera*, figg. 6 & 7, *E. ? carilla*, fig. 8, *E. ocalea*, fig. 9, p. 127, *ora*, fig. 10, p. 128, DRUCE, Biol. Centr. Am. Heter. ii : n. spp.
- Erosina meropia*, Costa Rica, DRUCE, p. 55, pl. xlvi, fig. 10, Biol. Centr. Am. Heter. ii, n. sp.
- Erythrolophus*, n. g., *Ephyrides*, p. 10, for *E. fascicorpus*, n. sp., Khasia Hills, p. 11 ; SWINHOE, Tr. E. Soc. 1892.
- Eubolia ? flavescens*, Ordoss, ALPHÉRAKY, p. 68, pl. iii, fig. 6, Romanoff Mem. vi, n. sp.
- Eucosmia montivagata*, larva ; PÜNGELER, S. E. Z. liii, p. 75.

- Eumera*, n. g., near *Eugonia* for *E. regina*, n. sp., Amasia, pl. ii, fig. 8 ;  
 STAUDINGER, p. 162, Deutsche e. Z. Lep. v.
- Eupithecia innotata* and *frazinata*, note on ; HABICH, p. 159, S. E. Z. liii,  
*E. castigata*, note on melanic var. of ; TUGWELL, Ent. xxv, p. 41. *E.*  
*extensaria*, larval habits ; PORRITT, Ent. M. M. xxviii, p. 122.
- E. horticolaria*, Rhineland, FUCHS, JB. nass. Ver. xlv, p. 102 ; *E. accurata*,  
 Central Asia, p. 251, *irritaria*, Armenia, p. 253, *albidulata*, Caucasus,  
 p. 254, *kuldschaensis*, p. 255, *æquata*, p. 256, *marginata*, p. 257,  
 Central Asia, *subfenestrata*, Trans-Caucasus, p. 259, STAUDINGER,  
 Deutsche e. Z. Lep. v ; *E. filicata*, p. 1, *rigida*, p. 2, pl. 1, fig. 6,  
 Khasia Hills, SWINHOE, Tr. E. Soc. 1892 : n. spp.
- Eusarca jacularia*, n. var., *minor* ; ALPHÉRAKY, p. 71, Romanoff Mem. vi.  
*E. acidaria*, p. 204, *dispar*, p. 205, Central Asia, STAUDINGER, Deutsche  
 e. Z. Lep. v, n. spp.
- Euschema ares*, characters and synonymy ; WEYMER, p. 122, S. E. Z.  
 liii.
- Fergana*, n. g., near *Chemerina*, for *F. oreophila*, n. sp., Alai Mts., pl. ii,  
 fig. 9 ; STAUDINGER, p. 166, Deutsche e. Z. Lep. v.
- Fidonia cretacea*, Central Asia, STAUDINGER, p. 197, Deutsche e. Z. Lep.  
 v ; *F. opulenta*, Peru, THIERRY-MIEG, p. 216, Le Nat. 1892 ; *F.*  
*incandescens*, Chili, THIERRY-MIEG, p. 236, t. c. : n. spp.
- Geometra iridaria*, figured, pl. xlix, fig. 5, Biol. Centr. Am. Heter. ii.
- G. muscipunctata*, Loja, DOGNIN, p. 186, Le Nat. 1892 ; *G. carbina*,  
 pl. xlix, fig. 8, *aturia*, fig. 9, Mexico, DRUCE, p. 84, Biol. Centr. Am.  
 Heter. ii : n. spp.
- Glaucopteryx immaculata*, Greenland, SKINNER, p. 159, P. Ac. Phil. 1892,  
 n. sp.
- Gnopharmia*, n. g., p. 181, for *Gnophos colchidaria*, Led., with *G. rubraria*,  
 Syria, pl. ii, fig. 12, p. 184, *maculifera*, Samarcand, fig. 13, p. 187 ;  
 STAUDINGER, Deutsche e. Z. Lep. v.
- Gnophos vastaria*, Central Asia, p. 189, *dubitaria*, Persia, p. 192, STAU-  
 DINGER, Deutsche e. Z. Lep. v, n. spp.
- Gonanticlea*, n. g., p. 3, for *G. aversa*, n. sp., Khasia Hills, p. 4 ; SWINHOE,  
 Tr. E. Soc. 1892.
- Gonodela kilimanjarensis*, *rhabdophoru*, E. Africa, HOLLAND, Ent. xxv  
 (Supp.), p. 95, n. spp.
- Gynopteryx fundaria*, multiple synonymy ; DRUCE, p. 36, Biol. Centr. Am.  
 Heter. ii.
- G. asopia*, pl. xliv, fig. 14, *mynes*, fig. 15, *megasa*, fig. 16, *minoa*, fig. 17,  
 p. 37, *asteria*, figg. 18 & 19, p. 38, Central America, Biol. Centr. Am.  
 Heter. ii, n. spp.
- Halia berytaria*, Beyrout, STAUDINGER, p. 200, Deutsche e. Z. Lep. v,  
 n. sp.
- Halkia nigripars*, Khasia Hills, SWINHOE, p. 16, pl. i, fig. 1, Tr. E. Soc.  
 1892 ; *H. aurantiaca*, Ganssu, ALPHÉRAKY, p. 56, pl. iii, fig. 2,  
 Romanoff Mem. vi : n. spp.
- Hemithea idæa*, Khasia Hills, SWINHOE, p. 6, Tr. E. Soc. 1892, n. sp.



- Haritis tessatrix*. Loja, DOGNIN, p. 185, Le Nat. 1892; *H. ?* a  
*Panama*, Druce, p. 25, pl. xlv, fig. 1, Biol. Centr. Am. He  
*H. ? capensis*. Peru. THIERRY-MIEG, p. 217, Le Nat. 1892; r  
*Himera costar.* Guatemala, Druce, p. 70, pl. xlviii, fig. 3, Biol. Cen  
Heter. ii. n. sp.
- Hypomnema gypsoeola*, S. Australia, LOWER, p. 11, Tr. R. Soc. S.  
xv. n. sp.
- Hypochroma viola*. Colombia, THIERRY-MIEG, p. 237, Le Nat. 18  
*cedina*, pl. xlv, figg. 24-25, *babona*, figg. 27 & 28, p. 58,  
pl. xlvii, figg. 1 & 2, *memora*, figg. 4-7, p. 59, Central America, I  
Biol. Centr. Am. Heter. ii : n. spp.
- Hypoclysus rufefasciata*, Laos, POTJADE, p. 274, pl. xi, fig. 8, N  
Mus. Paris 3<sup>e</sup> iii, n. sp.
- Hypocissus aurestinctor*, p. 297, *diffundens*, p. 298, Australia, I  
P. Linn. Soc. N.S.W. (2) vi; *H. eugramma*, S. Australia, L  
p. 14 Tr. R. Soc. S. Austr. xv : n. spp.
- Ides hamperi*, p. 14. *albivertex*, p. 15. Khasia Hills, SWINHOE,  
Soc. 1892 n. spp.
- Ides impunctata bernarda*, p. 293, *crusulata*, p. 294, *multitincta*, ni  
p. 295, Australia, LUCAS, P. Linn. Soc. N.S.W. (2) vi; *I. co  
nata*, LUCAS, p. 252, op. cit. vii : *I. ipomopsis*, S. Australia, L  
p. 14 Tr. R. Soc. S. Austr. xv : n. spp.
- Kyrtachia*, n. g. for *Ortholitha* (K.) *obstinata*, n. sp., Central Asia,  
fig. 15 : STATDINGER, p. 213, Deutsche e. Z. Lep. v.
- Leucophaea*, n. g. = (*Trichoplausa*, Stgr.) : MEYRICK, p. 70, Tr. E. Soc  
*Leucis atrata*, pl. xlv, fig. 3, *megastira*, fig. 5, Druce, p. 52, Biol.  
Am. Heter. ii, n. spp.
- Limena*, n. g. near *Eges*, for *L. macraria*, n. sp., Sarepta, pl. ii, f  
STATDINGER, p. 195, Deutsche e. Z. Lep. v.
- Lithocege witzmanni*, Kurdistan, STANDFUS, p. 668, pl. xv,  
BOCHARD Mem. vi. n. sp.
- Loxophanes rosalia*. Loja, DOGNIN, p. 274, Le Nat. 1892; *L. ebrion  
parvula*. Loja, DOGNIN, p. 295, t. c. : n. spp.
- Lunipropiia spidiata*, p. 633, *isocyma*, p. 634, Australia, MEYRICK, P.  
Soc. N.S.W. (2) vi. n. spp.
- Lunipia*, n. g. near *Acidalia*, for *L. extraordinaria*, n. sp., Beyrou  
fig. 7 : STATDINGER, p. 157, Deutsche e. Z. Lep. v.
- Lycauges domocruzi*, Transvaal, DISTANT, p. 240, pl. ii, fig. 4, Nat  
Transvaal. n. sp.
- Lycias cyrena*. Loja, DOGNIN, p. 185, Le Nat. 1892, n. sp.
- Macaria rugata*, Gn. = (*arata*, Saalm.) : SNELLEX, p. 83, Tijdsch  
xxxv.
- M. novata anomalata*, Amdo, ALPHÉRAKY, p. 455, Hor. Ent. Bos  
*M. drepanata*, Flores, *goramata*, Goram, RÖBER, p. 331, Ti  
Ent. xxxiv (figg. in xxxv) : n. spp.
- Mareisa ? madifasciata*. Borneo, BUTLER, p. 132, pl. vi, fig. 10, P  
1892, n. sp.

- Mecoceras aulis*, Mexico, DRUCE, p. 95, pl. 1, fig. 15, Biol. Centr. Am. Heter. ii, n. sp.
- Megalochloru*, n. g., near *Euchloris*; MEYRICK, p. 95, Tr. E. Soc. 1892.
- Megameloŕon*, n. g., *Boarmiida*, for *M. piperatum*, n. sp., Ganssu, pl. iii, fig. 3; ALPHÉRAKY, p. 58, Romanoff Mem. vi.
- Metanema cabiria*, p. 67, pl. xlvii, figg. 20 & 21, *bonadea*, figg. 22 & 23, *neon*, figg. 24 & 25, *brea*, fig. 26, p. 68, Central America, DRUCE, Biol. Centr. Am. Heter. ii, n. spp.
- Metrocampa glaucias*, Australia, MEYRICK, p. 644, P. Linn. Soc. N.S.W. (2) vi, n. sp.
- Micronia*: systematic position; SNELLEN, p. 19, Tijdschr. Ent. xxxv. *M. archilis*, Obert., referred to *Pseudomicronia*, and figured, pl. iii, fig. 1; ALPHÉRAKY, p. 53, Romanoff Mem. vi.
- M. simpliciat*a, Goram, RÖBER, p. 331, Tijdschr. Ent. xxxiv (fig. in xxxv), n. sp.
- Midodoca*, n. g., *Selidosemida*, for *M. tozeuta*, n. sp., Australia; MEYRICK, p. 661, P. Linn. Soc. N.S.W. (2) vi.
- Maesampela*, n. g., with *M. comarcha*, p. 656, *lenæa*, p. 657, n. spp., Australia, and including *Idiodes privata*, Gn., and *Chlenias fucata*, Feld.; MEYRICK, P. Linn. Soc. N.S.W. (2) vi.
- Mnesampela privata*, metamorphoses; LIDGETT, Vict. Nat. ix, p. 67.
- Mochlotona*, n. g., *Selidosemida*, p. 672, for *M. phasmatis*, n. sp., Australia, p. 673; MEYRICK, P. Linn. Soc. N.S.W. (2) vi.
- Monoctenia izimia*, *calladelp*ha, S. Australia, LOWER, p. 7, Tr. B. Soc. S. Austr. xv, n. spp.
- Mychonia*? *bityla*, pl. xlvii, fig. 27, *nosla*, fig. 28, Central America, DRUCE, p. 69, Biol. Centr. Am. Heter. ii, n. spp.
- Myinodes*, n. g., for *interpunctaria*, H.-S.; MEYRICK, p. 82, Tr. E. Soc. 1892.
- Mysticoptera*, n. g., for *sexalisata*, Hb.; MEYRICK, p. 62, Tr. E. Soc. 1892.
- Nelo*, *see Bombyces*, p. 242.
- Nemoria pretiosaria*, n. var. *gigantaria*; STAUDINGER, p. 143, Deutsche e. Z. Lep. v. *N. iris*, figured, pl. xlix, fig. 10, Biol. Centr. Am. Heter. ii.
- N. mollissima*, *N.?* *vitiosaria*, Ecuador, DOGNIN, p. 186, Le Nat. 1892; *N. assa*, Costa Rica, DRUCE, p. 85, pl. xlix, figg. 11 & 12, Biol. Centr. Am. Heter. ii: n. spp.
- Neolythria*, n. g., near *Lythria*, p. 71, for *N. abrazaria*, n. sp., China, p. 72, pl. iii, fig. 8; ALPHÉRAKY, Romanoff Mem. vi.
- Neoteristis*, n. g., *Selidosemida*, for *N. paraphanes*, n. sp., Tasmania; MEYRICK, p. 672, P. Linn. Soc. N.S.W. (2) vi.
- Neurophana amatonga*, E. Africa, VUILLOT, p. cxciv, Bull. Soc. Ent. Fr. lxi, n. sp.
- Nipteria impunctata*, *panacea*, *valens*, *panopea*, Peru, THIERRY-MIEG, p. 217, Le Nat. 1892; *N. semigrisea*, *minor*, *erigone*, Peru, *tapponia*, Brasil, THIERRY-MIEG, p. 236, t. c.; *N. riatriz*, THIERRY-MIEG, p. 262, t. c.; *N. athiopissa*, *sororcula*, *tironaria*, *pellucenta*, *costistigmata*, *securata*, *dividua*, Loja, DOGNIN, p. 238, t. c.: n. spp.

- Nychiodes lividaria*, varr. described; STAUF  
Lep. v.
- Odontoptera muscularia*, Central Asia, STAUF  
Lep. v; *O. bubula*, Mexico, DRUCE, p. 6  
Am. Heter. ii : n. spp.
- Enospila*, n. g., p. 5, *Thalera flavifusata*,  
Khasia Hills, p. 6; SWINHÖE, Tr. E. S
- Omphax nenia*, Mexico, DRUCE, p. 86, pl.  
Heter. ii, n. sp.
- Onychora*, n. g. for *agaritharia*, Dard.; M  
1892.
- Ophthalmophora melæ*, pl. 1, figg. 16 & 17, a  
19 & 20, *aspledon*, fig. 22, p. 97, *molpadia*,  
DRUCE, Biol. Centr. Am. Heter. ii, n. sp.
- Ortholitha appropinquaria*, p. 208, *integraria*,  
Central Asia, *subvicinaria*, Caucasus,  
Caucasus, pl. ii, fig. 17, p. 212, STAUDIN  
n. spp.
- Oulobophora*, n. g. for *Lobophora* (O.) *maced*  
fig. 19, STAUDINGER, p. 219, Deutsche e
- Oxydia gastropachata*, figured, pl. xliii, fig. 1
- O. dognini*, Peru, THIERRY-MIEG, Le Nat  
Mexico, p. 27, pl. xliii, fig. 11, *masthu*  
Guatemala, figg. 15 & 16, *artaxa*, Centi  
*angusta*, Panama, figg. 17 & 18, p. 29, Di  
ii : n. spp.
- Palæoctenis*, n. g., = (*Heteropsis*, Gn.); J  
1892.
- Panagra fixseni*, Amdo, ALPHÉRAKY, p. 456,  
*Paralæa*, n. g., *Selidosemidæ*, for *P. promach*  
RICK, p. 671, P. Linn. Soc. N.S.W. (2) v
- Pelagia*, n. subg. of *Acidalia*, GUMPPENBEI  
Nat. cur. lviii.
- Pellonia tabidaria*, Z., and *sieversi*, Chr., d  
TOPH, S. E. Z. liii, p. 245.
- P. adauctata*, Margelan, STAUDINGER, p. 1  
*P. grumaria*, Amdo, ALPHÉRAKY, p. 4  
n. spp.
- Perigramma religiosa*, *P. ? theodora*, Peru, T  
1892, n. sp.
- Perizera pulverulenta*, Khasia Hills, SWINHÖ  
fig. 8, n. sp.
- Phasianæ boarmiata*, Amurland, GRAESEN  
xxxvii; *P. tuncrearia*, Kuldja, STAUD  
Lep. v : n. spp.
- Phorodesma emaragdaria*, varr. described; S  
e. Z. Lep. v.

- P. smaragdularia*, Margelan, STAUDINGER, p. 142, Deutsche e. Z. Lep. v, n. sp.
- Photoscotosia*, Warr., is same as *Trichopleura*, Stgr.; *T. amplicata*, pl. iii, fig. 10, *T. undulosa*, fig. 9, figured; ALPHERAKY in Romanoff Mem. vi.
- Phthorarcha*, n. g. for *primigena*, Stgr.; MEYRICK, p. 80, Tr. E. Soc. 1892.
- Phyletis prasonaria*, Khasia Hills, SWINHOE, p. 12, Tr. E. Soc. 1892, n. sp.
- Phyllia triangularia*, Blanch., = (*cinerescens*, Butl.); REED, p. 68, Act. Soc. Chili, i.
- Planolocha*, n. g., *Selidosemidæ*, p. 645, for *P. autoptis*, n. sp., Australia, p. 646; MEYRICK, P. Linn. Soc. N.S.W. (2) vi.
- Polla avellana*, Peru, THIERRY-MIEG, p. 235, Le Nat. 1892, n. sp.
- Polynesia*, n. g., p. 4, type *Pomasia sunandeva*, Wlk., with *P. truncapex*, n. sp., Khasia Hills, p. 5; SWINHOE, Tr. E. Soc. 1892.
- Polythrena croceitincta*, Loja, DOGNIN, p. 107, Le Nat. 1892, n. sp.
- Proboloptera*, n. g., *Selidosemidæ*, for *P. embolias*, n. sp., Australia; MEYRICK, p. 641, P. Linn. Soc. N.S.W. (2) vi.
- Pseudotagma*, n. g., near *Chemerina*, for *Eusarca interpunctaria*, H.-Sch.; STAUDINGER, p. 168, Deutsche e. Z. Lep. v.
- Psilosticha*, n. g., for *Tephrosia mactaria*, Gn.; MEYRICK, p. 624, P. Linn. Soc. N.S.W. (2) vi.
- Pyrinia arzata*, p. 33, pl. xlv, figg. 6 & 7, *megara*, p. 34, figg. 8 & 9, Panama, DRUCE, Biol. Centr. Am. Heter. ii, n. spp.
- Racheospila roseilinearia*, *pellucidaria*, Ecuador, DOGNIN, p. 206, Le Nat. 1892; *R. arycanda*, pl. xlix, fig. 21, *athena*, fig. 22, p. 89, *calliope*, pl. i, figg. 1 & 2, *mustela*, fig. 3, *carys*, fig. 4, *astræa*, fig. 5, p. 90, *atrages*, fig. 6, p. 91, *busa*, fig. 8, *R. P. batina*, figg. 9 & 10, *asmura*, fig. 11, p. 92, Central America, DRUCE, Biol. Centr. Am. Heter. ii : n. spp.
- Rhodometra*, n. g., for the *Sterrha* of other authors than Hubner; MEYRICK, p. 75, Tr. E. Soc. 1892.
- Rhoptria*, n. subg. of *Boarmia*; GUMPENBERG, p. 299, N. Acta Ac. L.-C. Nat. cur. lviii.
- Rhyparia hamiltonia*, Khasia Hills, SWINHOE, p. 17, pl. i, fig. 5, Tr. E. Soc. 1892, n. sp.
- Rumia cratægata*, variation in colour of larvæ; GOULD, Tr. E. Soc. 1892, p. 216.
- Rumina lateolata*, n. var. *emaculata*; GRAESER, p. 317, Berl. Ent. Zeit. xxxvii.
- Sabulodes miliaria*, Loja, DOGNIN, Le Nat. 1892, p. 170; *S. lejanata*, *sticta*, *franciscata*, *xylinochroma*, DOGNIN, p. 185, t. c.; *S. ornatissima*, Peru, THIERRY-MIEG, p. 262, t. c. : n. spp.
- Scardamia chrysolina*, Australia, MEYRICK, p. 640, P. Linn. Soc. N.S.W. (2) vi, n. sp.
- Scioglyptis*, n. g., *Selidosemidæ*, for *S. lithinopa*, p. 593, *hameropa*, p. 594, n. spp., Australia; MEYRICK, P. Linn. Soc. N.S.W. (2) vi.

- Scodionima*, n. g. for *Scodiona* (*S.*) *crocallaria*, n. sp., Central Asia fig. 15 ; STAUDINGER, p. 202, Deutsche e. Z. Lep. v.
- Scordylia valbum*, Peru, THIERRY-MIEG, p. 216, Le Nat. 1892, n. 1.
- Scolosia senescens*, N. Persia, p. 223, *neglectata*, Central Asia, STAUDINGER, Deutsche e. Z. Lep. v ; *S. confirmata*, Loja, I p. 59, Le Nat. 1892 : n. spp.
- Selenia illunaria* and *lunaria*, colour influenced by temperature in stage ; MERRIFIELD, Tr. E. Soc. 1892, p. 34.
- S. monima*, pl. xlv, figg. 11 & 12, *asteria*, fig. 13, *myrina*, fig. 14, figg. 15 & 16, p. 56, *nabdalea*, fig. 21, *marcæa*, figg. 17 & 18, b figg. 19 & 20, *azamora*, figg. 22 & 23, p. 57, Mexico and Gu DRUCE, Biol. Centr. Am. Heter. ii, n. spp.
- Selidosemidae*, tabulation of the Australian genera of ; M pp. 582-585, P. Linn. Soc. N.S.W. (2) vi.
- Selidosema aristarcha*, N. Zealand, MEYRICK, Tr. N. Z. Inst. x *cheleuta*, p. 598, *amphiclina*, p. 599, *cremias*, *thermea*, p. 600, c p. 605, *leptodesma*, p. 606, *leucoplecta*, p. 607, *agoræa*, p. 608, a p. 610, *adelphodes*, p. 611, *sascia*, p. 613, *argoplaca*, p. 615, At MEYRICK, P. Linn. Soc. N.S.W. (2) vi, n. spp.
- Sicya aurunca*, pl. xlv, fig. 7, *mesapia*, fig. 8, *bala*, fig. 9, *neda*, figg. 1 p. 46, *wyron*, figg. 12 & 13, *S. ? ascolia*, fig. 14, p. 47, Central A DRUCE, Biol. Centr. Am. Heter. ii, n. spp.
- Spargania longipalpata*, Peru, THIERRY-MIEG, p. 262, Le Nat n. sp.
- Stathmorrhopa*, n. g. for *Chlenias beggaria*, Gn. ; MEYRICK, p. Linn. Soc. N.S.W. (2) vi.
- Stegania crima*, Khasia Hills, SWINHOE, p. 14, pl. i, fig. 14, Tr. 1892, n. sp.
- Stierha virgenpamba*, Loja, DOGNIN, p. 237, Le Nat. 1892, n. sp.
- Stibaroma*, n. g., *Selidosemidae*, for *S. melanotoxa*, n. sp., Au MEYRICK, p. 669, P. Linn. Soc. N.S.W. (2) vi.
- Stibaroma trigramma*, S. Australia, LOWER, p. 9, Tr. R. Soc. S. Au n. sp.
- Stigma isthmensis*, Panama, THIERRY-MIEG, p. 236, Le Nat, 1892, 1
- Streptopteron*, n. g. (*Ephyrides*), p. 9, for *S. posticamplum*, n. sp., Hills, p. 10, pl. i, fig. 12 ; SWINHOE, Tr. E. Soc. 1892.
- Strophidia falcifera*, E. Africa, WEYMER, p. 118, S. E. Z. liii, n. sp.
- Syllexis extendata*, *chartularia*, Loja, DOGNIN, p. 144, Le Nat. 1892
- Synchlora ? nortia*, Mexico, DRUCE, p. 93, pl. i, fig. 12, Biol. Cen Heter. ii, n. sp.
- Synegiodes*, n. g., type *Anisodes diffusaria*, Moore, with *S. diffus* p. 11, pl. i, fig. 9, *histrionaria*, p. 12, n. spp., Khasia Hills ; Sw Tr. E. Soc. 1892.
- Syngonorthus*, n. g., *Urapterygidae*, for *S. subpunctatus*, n. sp., Borneo fig. 9 ; BUTLER, p. 130, P. Z. S. 1892.
- Tachyphyle ? neis*, Central America, DRUCE, p. 93, pl. i, fig. 13 Biol. Centr. Am. Heter. ii, n. spp.

- Tephronia oranaria*, Algeria, p. 179, *castilliaris*, Spain, p. 180, pl. ii, fig. 11, STAUDINGER, Deutsche e. Z. Lep. v, n. spp.
- Tephrosia bostar*, p. 76, pl. xlviii, fig. 13, *bura*, fig. 14, *T. ? asenia*, fig. 15, *balsa*, fig. 16, p. 77, *T. muræna*, figg. 17 & 18, *azica*, fig. 19, p. 78, Central America, DRUCE, Biol. Centr. Am. Heter. ii, n. spp.
- Terpnomicta lala*, Khasia Hills, SWINHOE, p. 13, Tr. E. Soc. 1892, n. sp.
- Tetracis azonax*, pl. xlv, fig. 8, *belides*, fig. 9, Central America, DRUCE, p. 54, Biol. Centr. Am. Heter. ii, n. spp.
- Thalassodes liliana*, Khasia Hills, SWINHOE, p. 7, pl. i, fig. 2, Tr. E. Soc. 1892, n. sp.
- Thalera acte*, Khasia Hills, SWINHOE, p. 6, pl. i, fig. 13, Tr. E. Soc. 1892 ; *T. spumosaria*, *eximia*, Peru, DOGNIN, p. 237, Le Nat. 1892 : n. spp.
- Thamnonoma wawaria*, aberration ; VRIES & SNELLEN, Tijdschr. Ent. xxxv, pp. 24 & 25.
- Therina axion*, pl. xlv, figg. 25 & 26, *betala*, fig. 27, *munda*, fig. 28, p. 50, *bada*, pl. xlv, figg. 1 & 2, *T. ? nomia*, fig. 4, p. 51, Central America, DRUCE, Biol. Centr. Am. Heter. ii, n. spp.
- Tosaura*, n. g., p. 15, type *Metabrazas falcipennis*, Moore, with *T. picaria*, n. sp., Khasia Hills, p. 16, pl. i, fig. 16 ; SWINHOE, Tr. E. Soc. 1892.
- Trichoclada opsinaria*, Khasia Hills, SWINHOE, p. 15, Tr. E. Soc. 1892, n. sp.
- Trichopleura leechi*, Amdo, ALPHÉRAKY, p. 458, Hor. Ent. Ross. xxvi, n. sp.
- Triphosia ravulata*, Central Asia, STAUDINGER, p. 221, Deutsche e. Z. Lep. v, n. sp.
- Trygodes musivaria*, figured, pl. li, figg. 6 & 7, Biol. Centr. Am. Heter. ii.
- T. niobe*, pl. li, figg. 9 & 10, *merta*, fig. 11, p. 106, *ategua*, fig. 12, *melia*, fig. 13, *callas*, fig. 14, *carbania*, fig. 15, p. 107, *T. ? auxesia*, figg. 16 & 17, p. 108, Central America, DRUCE, Biol. Centr. Am. Heter. ii, n. spp.
- Trapteryx hilaris*, Peru, THIERRY-MIEG, p. 217, Le Nat. 1892, n. sp.
- Xanthorhoe paradelpa*, p. 11, *hyperythra*, p. 12, *xanthospila*, p. 13, S. Australia, LOWER, Tr. R. Soc. S. Austr. xv, n. spp.
- Xenomusa metallica*, Brisbane, LUCAS, p. 299, P. Linn. Soc. N.S.W. (2) vi, n. sp.
- Zamacra*, n. g. for *flabellaria*, Heeg. ; MEYRICK, p. 121, Tr. E. Soc. 1892.
- Zonosoma albilineata*, Central Asia, STAUDINGER, p. 159, Deutsche e. Z. Lep. v ; *Z. alodia*, Loja, DOGNIN, p. 16, Le Nat. 1892 : n. spp.

#### PYRALIDÆ (including CRAMBIDÆ, PHYCITIDÆ, SICULODIDÆ).

- Cf. COCKERELL (177), DISTANT (216), FERNALD (280), HULST (441), KELLOGG (479), LUCAS (568, 569), MÜLLER (629), PAGENSTECHER (667, 668, 669), RAGONOT (712), REBEL (715), RÖBER (767), SNELLEN (872, 873), STAUDINGER (890, 891), SWINHOE (909), WARREN (983).]
- Acharana rudis*, Japan, *minoralis*, Accra, *maledicta*, Pitcairn I., p. 435, *descripta*, S. Paolo, *simplex*, Bombay, *olivescens*, Ecuador, *indistincta*, Japan, p. 436, *elongalis*, Formosa, *fuscescens*, Japan, p. 437, WARREN, Ann. N. H. (6) ix, n. spp.

- Acrobasis circeferella*, Texas, HULST, p. 60, Canad. Ent. xxiv, n. sp.  
*Actenoides*, n. g., type *Nephopteryx crespialis*, Swinhoe; WARREN, |  
 Ann. N. H. (6) ix.  
*Adeloides*, n. g., type *Hoterodes cinerealis*, Moore; WARREN, p. 299,  
 N. H. (6) ix.  
*Aglaope*, n. g., type *Mecyna furnacalis*, Gn.; WARREN, p. 298, Ann.  
 (6) ix.  
*Agrammia cervicalis*, *lutealis*, S. Paolo, WARREN, p. 439, Ann. N.  
 ix, n. spp.  
*Anomostictis*, n. n. (to replace *Diastictis*, Hb. Verz., p. 355), wi  
*cæcalis*, n. sp., California; WARREN, p. 434, Ann. N. H. (6) ix  
*Anthocrypta*, n. g. for *Ebulea subinquinialis*, Gn.; WARREN, p. 296  
 N. H. (6) ix.  
*Aphomia*? *proaristella*, Canary Is., REBEL, p. 262, Ann. Hofmuseum  
 vii, n. sp.  
*Aphytoceros nigrolinealis*, Goya, p. 390, *longipalpis*, Transvaal, p  
 WARREN, Ann. N. H. (6) ix, n. spp.  
*Aplographe*, n. g., type *Scopula bisignata*, Butl, with *A. fulvalis*,  
 Good Hope, *umbrosalis*, N. China, n. spp.; WARREN, p. 301, A  
 H. (6) ix.  
*Aporodes obscura*, Sarepta, *versicolor*, Washington Terr.; WARREN,  
 Ann. N. H. (6) ix, n. spp.  
*Archernis pubescens*, E. Asia, WARREN, p. 300, Ann. N. H. (6) ix, n  
*Autocosmia*, n. g., near *Cosmocreon*, p. 432, for *A. concinna*, n. sp.,  
 America, WARREN, p. 433, Ann. N. H. (6) ix.  
*Basotarcha cunealis*, Port Darwin, WARREN, p. 396, Ann. N. H. (6) ix  
*Blepharucha*, n. g., type *Phalena saide*, Stoll.; WARREN, p. 177, A  
 H. (6) ix.  
*Botys commellalis*, early stages; CHÉTIEN, Bull. Soc. Ent. Fr. lxi, p  
*B. graeseri*, Siberia, STAUDINGER, p. 384, pl. iii, fig. 24, Deutsche e. Z.  
 v; *B. catasemalis*, Ké I, RÖBER, p. 333, Tijdschr. Ent. xxxiv (1901)  
 xxxv) : n. spp.  
*Bradyrrhoa ochrospilella*, Canary Is., REBEL, p. 258, pl. xvii, fig. 13  
 Hofmuseum Wien, vii, n. sp.  
*Camptomastix*, n. g., type *Botys pacalis*, Leech; WARREN, p. 439,  
 N. H. (6) ix.  
*Cataclysta lemnae*, respiration of larva; MÜLLER, Zool. Jahrb. Sy  
 p. 623: *Cataclysta* spp.? subaquatic oviposition; MÜLLER  
 p. 625.  
*C. kapilista*, Khasia Hills, SWINHOK, p. 20, pl. i, fig. 11, Tr. F  
 1892, n. sp.  
*Cephis*, n. g., *Crambina*, p. 295, for *C. galleriellus*, n. sp., Tunis, |  
 pl. iii, fig. 12; BAGNOT, Deutsche e. Z. Lep. v.  
*Chilo infuscatellus*, Java, SNELLEN, p. 347, Tijdschr. Ent.  
 n. sp.  
*Chipeki*, n. g., near *Tampa*, for *C. perlepidella*, n. sp., Florida; F  
 p. 62, Canad. Ent. xxiv.

- Choristostigma*, n. g., type *Botys plumbosignata*, Fern., with *C. elegantalis*, n. sp., California; WARREN, Ann. N. H. (6) ix.
- Oisrochista margarita*, S. Paolo, WARREN, p. 430, Ann. N. H. (6) ix, n. sp.
- Cnephidia*, n. g., near *Selagia*, for *C. kenteriella*, n. sp., Siberia; RAGONOT, p. cccxxv, Bull. Soc. Ent. Fr. lxi.
- Conogethes nubifera*, Brisbane, LUCAS, p. 264, P. Linn. Soc. N.S.W. (2) vii, n. sp.
- Coptobasis ridopalis*, Khasia Hills, SWINHOE, p. 18, Tr. E. Soc. 1892, n. sp.
- Cornifrons pulveralis*, N. America, WARREN, p. 435, Ann. N. H. (6) ix, n. sp.
- Cosmocroon*, n. g., type *B. albicerialis*, Grote; WARREN, p. 433, Ann. N. H. (6) ix.
- Crambus atlanticus*, n. var. *canariensis*; REBEL, p. 254, pl. xvii, figg. 11 & 12, Ann. Hofmuseum Wien, vii.
- Cramnophila*, n. g., near *Adolosemia*, for *C. auranticiliella*, n. sp., Siberia; RAGONOT, p. cccxxvi, Bull. Soc. Ent. Fr. lxi.
- Cybolomia extorris*, N. America, WARREN, p. 395, Ann. N. H. (6) ix, n. sp.
- Diacme*, n. g., type *Samea phyllisalis*, Wlk.; WARREN, p. 389, Ann. N. H. (6) ix.
- Diatraea saccharalis*, notes on in Jamaica, with metamorphoses; COCKRELL (177).
- D. striatalis*, Java, SNELLEN, p. 349, pl. xix, figs. 1-4, Tijdschr. Ent. xxxiv, n. sp.
- Dichotis*, n. g., type *Botys teneralis*, Led.; WARREN, p. 392, Ann. N. H. (6) ix.
- Didymostoma*, n. g., type *Botys euphranoralis*, Wlk.; WARREN, p. 392, Ann. N. H. (6) ix.
- Dioryctria nivaliensis* (Rag. i. l.), Canary Is., REBEL, p. 256, pl. xvii, fig. 10, Ann. Hofmuseum Wien, vii, n. sp.
- Diviana nymphæella*, Florida, HULST, p. 62, Canad. Ent. xxiv, n. sp.
- Durdara ovifera*, Borneo, BUTLER, p. 129, pl. vi, fig. 7, P. Z. S. 1892, n. sp.
- Ebulea fumipennis*, p. 392, *E. ? straminea*, California, *pulverulenta*, Dharmaala, p. 393, WARREN, Ann. N. H. (6) ix, n. spp.
- Ematheudes tunisiella*, Tunis, RAGONOT, p. 298, Deutsche e. Z. Lep. v, n. sp.
- Endotricha rogenhofers*, Canary Is., REBEL, p. 249, pl. xvii, fig. 1, Ann. Hofmuseum Wien, vii; *E. crobulus*, p. 305, *dispergens*, p. 306, Queensland, LUCAS, P. Linn. Soc. N.S.W. (2) vi : n. spp.
- Emnychia intrudens*, New Zealand, WARREN, p. 175, Ann. N. H. (6) ix, n. sp.
- Ephestia sericaria*, Scott, queried as identical with *kukniella*; RAGONOT, p. cclxxiv, Bull. Soc. Ent. Fr. lxi.
- Euclasta warreni*, Transvaal, DISTANT, Naturalist Transvaal, p. 241, pl. ii, fig. 5, n. sp.
- Euctenospila*, n. g., near *Blepharucha*, for *E. castalis*, n. sp., Abyssinia; WARREN, Ann. N. H. (6) ix.



- Emergistis consimilis* (no locality), WARREN, p. 433, Ann. N. H. (6) ix.
- Eumyphus concolorella*, Tunis, RAGONOT, p. 297, Deutsche e. Z. I n. sp.
- Glaucosia*, n. g., type *Botys deductalis*, Wlk., with *G. sub* Madagascar, *fuscescens*, Sumatra, n. spp.; WARREN, pp. 296 Ann. N. H. (6) ix.
- Glyphodes prothymalis*, Khania Hills, SWINHOE, p. 19, pl. i, fig. 15, Soc. 1892, n. sp.
- Hemiscopsis cinerea*, Japan, *expansa*, Dharmala, WARREN, p. 396 N. H. (6) ix, n. spp.
- Homocoma canariella*, Canary Is., REBEL, p. 260, Ann. Hofm Wien, vii; *H. delineata*, Brisbane, LUCAS, p. 266, P. Linn. N.S.W. (2) vii: n. spp.
- Hyaloplagia*, n. g., type *Hydrocampa pulchralis*, Moore; WARREN, Ann. N. H. (6) ix.
- Hyalorista*, n. g., type *Rhadaria tenuilalis*, Gn., with *H. imitans*, S. Paolo: WARREN, Ann. N. H. (6) ix, p. 299.
- Hydrocampa nymphata*, structure of larva, skin, breathing, habit discussed; MÜLLER, Zool. Jahrb. Syst. vi, pp. 617-622.
- Hypotomorpha*, n. g., near *Ancylelonia*, p. 252, for *H. lance* n. sp., Canary Is., p. 253, pl. xvii, figs. 4 & 5; REBEL, Ann. museum Wien, vii.
- Lipographis subocella*, Bahamas, HULST, p. 62, Canad. Ent. xxiv, *Loreocrea*, n. g., type *Salbia continuatalis*, Wllng.; WARREN, p. 432 N. H. (6) ix.
- Loxostege baccatalis*, Texas, HULST, p. 63, Canad. Ent. xxiv, n. sp.
- Melitera dentata*, metamorphoses; KELLOGG, Kansas Quart. i, pl. viii.
- Metographe junctalis*, Japan, WARREN, p. 434, Ann. N. H. (6) ix, 1.
- Merothyria*, n. g., type *Botys aluensis*, Butl.; WARREN, p. 300 N. H. (6) ix.
- Metasia excavatalis*, Tunis, RAGONOT, p. 294, pl. iii, fig. 14, Deutsche Lep. v, n. sp.
- Microctis*, n. g., type *Botys subilalis*, Hb., with *M. sanguinealis*, Japan: WARREN, p. 294, Ann. N. H. (6) ix.
- Mimochinia*, n. g., type *Botys thalialis*, Wlk.; WARREN, p. 174 N. H. (6) ix.
- Mimulea*, n. g., p. 440, for *M. olivialis*, *subrosea*, S. Paolo, *flavivotalis* Janeiro, n. spp., p. 441: WARREN, Ann. N. H. (6) ix.
- Monocona*, n. g., near *Tegostoma*, p. 173, for *M. rubralis*, n. sp., Calif. WARREN, Ann. N. H. (6) ix.
- Myelois flavotincta*, Brisbane, LUCAS, p. 265, P. Linn. Soc. N.S. vii: *M. fructetella*, *elegantella*, p. 59, *texanella*, *leucophaella*, p. America, HULST, Canad. Ent. xxiv: n. spp.
- Nascia citrinialis*, Dharmala, WARREN, p. 302, Ann. N. H. (6) ix, 1.
- Niphegrapta*, n. g., type *Epichromistis albiguttalis*, War.; WARREN, Ann. N. H. (6) ix.

- Noctuelia flavifimbrialis*, California, WARREN, p. 174, Ann. N. H. (6) ix, n. sp.
- Notarcha exculta*, Brisbane, LUCAS, p. 262, P. Linn. Soc. N.S.W. (2) vii, n. sp.
- Notaspis*, n. g., type *Botys tranquillalis*, Led. ; WARREN, p. 297, Ann. N. H. (6) ix.
- Nymphula sinuosa*, Brisbane, LUCAS, p. 261, P. Linn. Soc. N.S.W. (2) vii, n. sp.
- Ocala*, n. g., near *Dolichorhinia*, for *O. dryadella*, n. sp., Florida ; HULST, p. 61, Canad. Ent. xxiv.
- Oedematophora cacaalis*, Brisbane, LUCAS, p. 306, P. Linn. Soc. N.S.W. (2) vi, n. sp.
- Opsibotys latipennis*, *ocellalis*, Japan, WARREN, p. 295, Ann. N. H. (6) ix, n. spp.
- Pachynoa limitata*, Borneo, WARREN, p. 395, Ann. N. H. (6) ix, n. sp.
- Pachyzancla dissimilis*, Acora, WARREN, p. 442, Ann. N. H. (6) ix, n. sp.
- Paralipsa decorella*, N. America, HULST, p. 63, Canad. Ent. xxiv, n. sp.
- Paraponyx*, sp. (Brazil), respiration of larva ; MÜLLER, Zool. Jahrb. Syst. vi, p. 625.
- Pesocoma suffusalis*, Goya, WARREN, Ann. N. H. (6) ix, p. 390, n. sp.
- Pharambara sphoraria*, Khasia Hills, SWINHOE, p. 18, pl. i, fig. 17, Tr. E. Soc. 1892 ; *P. vinosa*, Borneo, BUTLER, p. 130, pl. vi, fig. 8, P. Z. S. 1892 : n. spp.
- Phlyctania ferruginealis*, *paolinalis*, *arenacea*, Rio de Janeiro, WARREN, p. 431, Ann. N. H. (6) ix, n. spp.
- Pindictora flavifrons*, Acora, WARREN, p. 172, Ann. N. H. (6) ix, n. sp.
- Prionopallus*, n. g., p. 437, for *P. sericea*, Dharmasala, *consocia*, *P. ? suffusalis*, Japan, p. 438, n. spp. ; WARREN, Ann. N. H. (6) ix.
- Prionophora torquesauria*, Brisbane, LUCAS, p. 255, P. Linn. Soc. N.S.W. (2) vii, n. sp.
- Prodasyneumis*, n. g., type *Botys inornata*, Butl. ; WARREN, p. 301, Ann. N. H. (6) ix.
- Pygospila tyres*, n. var., *cuprealis* ; SWINHOE, p. 19, pl. i, fig. 4, Tr. E. Soc. 1892.
- Pyrausta dorsipunctalis*, Canary Is., REBEL, p. 245, Ann. Hofmuseum Wien, vii ; *P. straminea*, *violacea*, Queensland, LUCAS, p. 263, P. Linn. Soc. N.S.W. (2) vii ; *P. coccinea*, California, WARREN, p. 176, Ann. N. H. (6) ix ; *P. magdalena*, Florida, FERNALD, p. 122, Canad. Ent. xxiv ; *P. nigralis*, Florida, FERNALD, p. 178, t. c. : n. spp.
- Ramila angustifimbrialis*, Burma, WARREN, p. 430, Ann. N. H. (6) ix, n. sp.
- Rhctocraspeda*, n. g., type *Botys periusalis*, Wlk. ; WARREN, p. 439, Ann. N. H. (6) ix.
- Rhodoneura notula*, hab. ? , *R. ? tessellatula*, Philippines, PAGENSTECHE, p. 58, Deutsche e. Z. Lep. v (for other n. spp. of *Rhodoneura* see *Bombyces*, p. 246) : n. spp.
- Salebria levigatella*, *purpurella*, N. America, HULST, p. 61, Canad. Ent. xxiv, n. spp.

- Scirpophaga intacta*, Java, SMELLEN, p. 343, pl. xviii, figs 1-4, Ent. xxxiv, n. sp.
- Semnomima* n. g. for *Hypotrifa flaviceps*, Barm. ; WARREN, p. 1 N. H. (6) ix.
- Sericophora guttata*, figured, Romanoff Mem. vi, pl. xiv, fig. 14.
- Sericoplaga* n. g., near *Opsibotys*, p. 295, for *S. externalis*, n. sp. p. 296 ; WARREN, Ann. N. H. (6) ix.
- Sicul[od]ida* : monographic revision of the group ; PAGENSTECHER, Deutsche e. Z. Lep. v, pp. 5-131, and Supplement to the id. t. c. pp. 443-449.
- Seculodes* (?) *ignotalis*, Bonerate, RÖBER, p. 329, Tijdschr. E. (fig. in xxxv) ; *S. pulchelloides*, Peru, p. 64, pl. i, fig. 4, Chiriqui, p. 65, *violalis*, Ecuador, *arcuata*, Chiriqui, p. 69, Peru, p. 70, *furcatula*, Cameroons, p. 71, pl. i, fig. 6, *er*, Brazil, pl. i, fig. 17, *squamigera*, p. 72, *catenula*, p. 73, *anastomosalis*, Chiriqui, *albipunctula*, Peru, p. 76, *tristriata*, video, p. 77, *laevigata*, p. 78, *ferruginea*, p. 79, *S. (Z. leuconotula*, p. 80, pl. i, fig. 15, *fumatis*, p. 81, Chiriqui, p. 82, *selenioides*, p. 83, pl. i, fig. 14, Peru, *maculata*, p. 91, *st*, p. 92, *patercula*, p. 94, Brazil, *fratercula*, California, p. 95, Peru, p. 96, pl. i, fig. 10, *denticulata*, Chiriqui, p. 98, pl. *politula*, Philippines, p. 101, *rotundula*, Amazons, p. 107, pl. *polychloralis*, Chiriqui, p. 108, *nigropunctula*, Natal, p. 109, *punctula*, Sumatra, p. 110, *flavula*, Gaboon, p. 111, *gutula*, pl. i, fig. 11, p. 112, *rosacea*, Malacca, p. 119, pl. i, fig. 3, Borneo, p. 121, *triangularis*, Philippines, p. 122, *globulifer* PAGENSTECHER, Deutsche e. Z. Lep. v : n. spp.
- Spilodes bicoloralis*, Bagdad, WARREN, p. 178, Ann. N. H. (6) ix,
- Stenochora*, n. g., type *Rhodaria luncinalis*, Gn. ; WARREN, p. 2 N. H. (6) ix.
- Stenomeles*, n. g., type *Botys agavealis*, Wlk. ; WARREN, p. 437, H. (6) ix.
- Strigina radiata*, Portorico, p. 41, *sordida*, Borneo, p. 47, PAGENSTECHER, Deutsche e. Z. Lep. v, n. spp.
- Syllythria* ? *rubrivena*, Madagascar, p. 176, *subnicalis*, California, WARREN, Ann. N. H. (6) ix, n. spp.
- Tanaophysa*, n. g. for *T. adornatalis*, n. sp., S. Paolo ; WARREN, Ann. N. H. (6) ix.
- Terastiodes*, n. g., type *Terastia ochracealis*, Wlk. ; WARREN, p. 2 N. H. (6) ix.
- Tetraphana alipes*, Amazons, p. 3, *lilacina*, Bolivia, p. 4, pl. i, fig. p. 131 said to be *Euclaea fenestrata*, Mén.) ; PAGENSTECHER, Deutsche e. Z. Lep. v, n. spp.
- Tholera stigmocalis*, S. Paolo, WARREN, p. 429, Ann. N. H. (6) ix, n. sp.
- Trichauchenia*, n. g., type *Euclaea dharmasala*, Butl. ; WARREN, Ann. N. H. (6) ix.

- Trischistognatha*, n. g., type *Spilodes palindialis*, Gn.; WARREN, p. 429, Ann. N. H. (6) ix.  
*Tritea protealis*, Callao, *ferruginea*, Coquimbo, WARREN, p. 179, Ann. N. H. (6) ix, n. spp.  
*Udea sabulosalis*, Coquimbo, p. 393, *indistinctalis*, N. America, *inhospitalis*, California, *nigripunctata*, Callao, p. 394, WARREN, Ann. N. H. (6) ix, n. spp.  
*Varnia aurea*, Chiriqui, p. 32, pl. i, fig. 13, *incudigera*, p. 33, *ypsiloides*, p. 35, Java, PAGENSTECHER, Deutsche e. Z. Lep. v, n. spp.  
*Zophodia bella*, Massachusetts, HULST, p. 61, Canad. Ent. xxiv, n. sp.  
*Zeuzerodes*, n. subg. of *Siculodes*, q.v.; PAGENSTECHER, p. 80, Deutsche e. Z. Lep. v.

## TORTRICIDÆ.

- [Cf. CHRÉTIEN (174), CONSTANT (182), FERNALD (280), MEYRICK (605), REBEL (715), RILEY (748, 749), SNELLEN (872), STAUDINGER (891).]  
*Bactra lanceolana*, = (*Chiloides straminea*, Butl.) ; MEYRICK, p. 217, Tr. N. Z. Inst. xxiv.  
*Cacaecia semiferana*, egg-clusters noticed ; GILLETTE, Canad. Ent. xxiv, p. 36. *C. rosana* and *parallela*, full-grown larvæ ; BEUTENMÜLLER, p. 80, Bull. Am. Mus. iv.  
*C. magnoliana*, New York, FERNALD, p. 121, Canad. Ent. xxiv, n. sp.  
*Carpocapsa saltitans*, determination of the plant ; RILEY, P. E. Soc. Wash. ii, pp. 178 & 213.  
*Ditula woodiana*, habits ; WOOD, Ent. M. M. xxviii, p. 225.  
*Doloploca buratica*, Siberia, STAUDINGER, p. 388, Deutsche e. Z. Lep. v, n. sp.  
*Eupacilia geyeriana* and larva figured ; RICHARDSON, P. Dorset Club, xiii, pl.  
*Grapholitha carduana*, n. var. *subvittana* ; STAUDINGER, p. 299, Deutsche e. Z. Lep. v.  
*G. kentsana*, Siberia, STAUDINGER, p. 390, Deutsche e. Z. Lep. v ; *G. schistaceana*, Java, SNELLEN, p. 353, pl. xix, figs. 5-7, Tijdschr. Ent. xxxiv ; *G. sebastianæ*, N. Mexico, RILEY, p. 214, P. E. Soc. Wash. ii : n. spp.  
*Noteraula*, n. g. (*Grapholithidæ*), for *Chiloides straminea*, Meyr., nec Butler ; MEYRICK, p. 217, Tr. N. Z. Inst. xxiv.  
*Pandemis simonyi*, Canary Is., REBEL, p. 263, pl. xvii, figs. 8 & 9, Ann. Hofmuseum Wien, vii, n. sp.  
*Penthina oblongana*, n. var. *adelana* ; REBEL, p. 526, Verh. a.-b. Wien, xlii.  
*Pyrgotis plinthoglypta*, New Zealand, MEYRICK, p. 218, Tr. N. Z. Inst. xxiv, n. sp.  
*Sciaphila cinareana*, Carcassonne, CHRÉTIEN, Le Nat. 1892, p. 132, n. sp.  
*Steganoptycha lindana*, Ontario, FERNALD, p. 178, Canad. Ent. xxiv, n. sp.

*Teras ferrugana*, metamorphoses, CHRÉTIEN, p. 240, Le Nat. 1892,  
*T. comandranu*, N. America, FERNALD, p. 121, Canad. Ent. xii  
*angusana*, N. America, FERNALD, p. 178, & c. : n. spp.

## TINEIDÆ.

[*Cy.* CHAPMAN (164), CONSTANT (182), DURRANT (210), ERSCHOFF  
 FERNALD (280), LOWER (565), MEYRICK (605), RAGONOT  
 REBEL (715, 716), RILEY (741, 742, 743), STAUDINGER (891),  
 (1014, 1015).]

Wing-neuration discussed; SPULER, Z. wiss. Zool. liii, pp. 626-635  
 Tineid larva mining leaves of *Populus fremonti* described; TOWN  
 ZOE, iii, pp. 234-236.

*Adela infantella*, figure, pl. xvi, fig. 3, Romanoff Mem. vi. *A. vir*  
 oviposition of; CHAPMAN, Ent. M. M. xxviii, p. 42.

*Blastobasis mammosella*, Woll., characters discussed; REBEL, p.  
 pl. xvii, fig. 6, Ann. Hofmuseum Wien, vii.

*Bucculatrix canadensisella*, metamorphoses; PACKARD, Ina. Life, v,  
 fig.

*Bupalis sagittatella*, figure, pl. xvi, fig. 12, Romanoff Mem. vi.

*Cerostoma falculella*, figure, pl. xvi, fig. 4, Romanoff Mem. vi.

*C. affinitella*, Siberia, STAUDINGER, p. 392, Deutsche e. Z. Lep. v, n.

*Choreutis solaris*, figure, Romanoff Mem. vi, pl. xvi, fig. 1.

*Coleophora lativittella*, figure, pl. xvi, fig. 11, Romanoff Mem. vi.

*C. sylvestricella*, p. 118, *glaucicolella*, p. 172, England, WOOD, Ent. i  
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- Hyadesimyia clausa*, referred to *Tachinidæ*, and *H. sarcophagoides* to the genus *Zelleria* ; BIGOT, p. 54, Wien. ent. Z. xi.
- Hylemyia coronata*, ♂ described ; BIDENKAP, Ent. Tidkr. xiii, p. 244.
- Hyphantrophaga*, n. g. for *Meigenia hyphantriæ*, Towns. ; TOWNSEND, p. 247, Psyche, vi.
- Hystricia aldrichi*, Dakota : TOWNSEND, p. 91, Tr. Am. Ent. Soc. xix, n. sp.

- Idia fasciata*, destroying locusts in Algeria ; BRONGNIART, *Le Nat.* 1892, p. 140.
- Tachnomma*, n. g., p. 103, *Tachininae*, for *L. magnicornis*, n. sp., New Mexico, p. 104 ; TOWNSEND, *Tr. Am. Ent. Soc.* xix.
- Leptoda elegans*, Java, WULF, p. 207, pl. xii, figg. 11 & 12, *Tijdschr. Ent.* xxxiv, n. sp.
- Leucostoma neomezicana*, New Mexico, TOWNSEND, p. 169, *Canad. Ent.* xxiv, n. sp.
- Limnophora zetterstedti*, Norway, BIDENKAP, p. 245, *Ent. Tidskr.* xiii n. sp.
- Liespa*, monograph of the European species ; KOWARZ, *Wien. ent. Z.* xi pp. 33-54.
- L. leucomelana*, Sarepta, *candicans*, Ægina, p. 36, *convexiuscula*, Sicily p. 48, KOWARZ, *Wien. ent. Z.* xi, n. spp.
- Loewia globosa*, Florida, TOWNSEND, p. 129, *Ent. News*, iii ; *L. ruficornis nigrifrons*, N. America, TOWNSEND, *Canad. Ent.* xxiv, p. 77 : n. sp.
- Lucilia sylvarum* attacking toads ; MORTENSEN, *Zool. Anz.* xv, p. 193.
- Lyperosia minuta*, Somaliland ; BEZZI, p. 192, *Ann. Mus. Genov.* (2) xi n. sp.
- Macquartia johnsoni*, N. America, TOWNSEND, p. 81, *Canad. Ent.* xxii n. sp.
- Macropalpus*, n. g. for *Exorista willica*, Zett. ; MEUNIER, *Bull. Soc. Ent. Fr.* lxi, p. ccviii.
- Masicera tenthredinidarum*, p. 285, *sphingivora*, *eufichia*, p. 286, *datanurus* p. 287, N. America, TOWNSEND, *Tr. Am. Ent. Soc.* xix ; *M. protoparcis*, Jamaica, TOWNSEND, p. 70, *J. Inst. Jamaica*, i : n. spp.
- Masistylum*, n. g., *Pyrrhosiides*, for *Pachystylum arcuatum*, Mik ; BRAUER, p. 595, *SB. Ak. Wien*, ci.
- Medoria* and *Morinia*, note on ; RÖDER, p. 374, *Ent. Nachr.* xviii.
- Megaprosopus michiganensis*, N. America ; TOWNSEND, p. 111, *Tr. Am. Ent. Soc.* xix.
- Meigenia websteri*, referred to *Prospheya*, Wulp ; TOWNSEND, p. 25 *Pysche*, vi.
- Metopia luggeri*, Minnesota, TOWNSEND, p. 69, *Canad. Ent.* xxiv, n. sp.
- Microtachina*, n. g. for *Tachina nympharum* and *erucarum*, Rond. : MULLER, p. 116, *Wien. ent. Z.* xi.
- Miltogramma decisa*, Florida, TOWNSEND, p. 81, *Ent. News*, iii ; *M. kansensis*, Kansas, TOWNSEND, p. 68, *Canad. Ent.* xxiv : n. spp.
- Musca corvina*, n. var., *somalorum* ; BEZZI, p. 190, *Ann. Mus. Genov.* (2) xii. *M. vomitoria*, embryology ; HENKING, *Z. wiss. Zool.* liv, p. 171.
- Muscopteryx*, n. g., *Phytoinæ*, p. 170, for *M. chatosula*, n. sp., Chihuahua p. 171 ; TOWNSEND, *Canad. Ent.* xxiv.
- Mythyria vanderwulpi*, Florida, TOWNSEND, p. 131, *Ent. News*, iii, n. sp.
- Neotractocera*, n. g., *Tachininae*, p. 105, for *N. anomala*, n. sp., New Mexico, p. 106 ; TOWNSEND, *Tr. Am. Ent. Soc.* xix.
- Olenochota*, n. g., *Phoroceratineæ*, p. 114, for *O. kansensis*, n. sp., N. America ; TOWNSEND, p. 115, *Tr. Am. Ent. Soc.* xix.

- Pachyophthalmus floridensis*, Florida, TOWNSEND, Ent. News, iii, p. 80, n. sp.
- Pachystylum* and *Pseudopachystylum*, and their species discussed, BRAUER, pp. 593-607, SB. Ak. Wien, ci; *Pachystylum*, note on the characters and composition of, and on Brauer's views thereon, MIK, pp. 245-248, Wien. ent. Z. xi; *P. arcuatum*, systematic position, MIK, p. 182, t. c.
- Phorbia seneciella*, Centr. Europe; MEADE, p. cxvi, Bull. Soc. Ent. Fr. lxi.
- Phorocera lophyri*, Canada, TOWNSEND, p. 289, Tr. Am. Ent. Soc. xix, n. sp.
- Phyto senilis*, New York, TOWNSEND, p. 81, Canad. Ent. xxiv; *P. nigricornis*, New Mexico, TOWNSEND, p. 170, t. c. : n. spp.
- Phytomyptera unicolor*, abdominal macrochætæ; MIK, p. 182, Wien. ent. Z. xi.
- Plagia aurifrons*, Pennsylvania, TOWNSEND, p. 67, Canad. Ent. xxiv, n. sp.
- Plagiprospherysa*, n. g. near *Phorocera*, for *P. valida*, p. 113, New Mexico, *floridensis*, Florida, p. 114, n. spp.; TOWNSEND, Tr. Am. Ent. Soc. xix.
- Polidea americana*, Michigan, TOWNSEND, p. 82, Canad. Ent. xxiv, n. sp.
- Pseudatractocera*, n. g., *Tachinina*, p. 107, for *P. neomexicana*, n. sp., New Mexico; TOWNSEND, Tr. Am. Ent. Soc. xix.
- Pseudogonia ruficauda*, Dakota, TOWNSEND, p. 66, Canad. Ent. xxiv, n. sp.
- Pseudohystieria exilis*, Jamaica, TOWNSEND, p. 146, Ent. News, iii, n. sp.
- Pseudomyiothyria*, n. g., *Phytoina*, p. 131, for *P. indecisa*, n. sp., Illinois, p. 132; TOWNSEND, Tr. Am. Ent. Soc. xix.
- Rhinophora valida*, p. 167, *mexicana*, p. 168, New Mexico, TOWNSEND, Canad. Ent. xxiv, n. spp.
- Sarcoclista*, n. g., *Phytoina*, p. 122, for *S. dakotensis*, n. sp., N. America, p. 123; TOWNSEND, Tr. Am. Ent. Soc. xix.
- Sarcodezia*, n. g., *Deziida*, p. 105, for *S. sternodontis*, n. sp., Jamaica, p. 106; TOWNSEND, J. Inst. Jamaica, i.
- Sarcomacronychia*, n. g., *Tachinina*, p. 100, for *S. unica*, n. sp., New Mexico, p. 101; TOWNSEND, Tr. Am. Ent. Soc. xix.
- S. sarcophagoides*, New Mexico, TOWNSEND, p. 165, Canad. Ent. xxiv, n. sp.
- Sarcophagida*: synopsis of the N. American genera; TOWNSEND, pp. 279-283, Tr. Am. Ent. Soc. xix.
- Sarcophaga cimbicis*, Dakota, TOWNSEND, p. 126, Canad. Ent. xxiv; *S. heliciis*, Ohio, TOWNSEND, Psyche, vi, p. 220; *S. opifera*, N. America (destroying *Melanoplus devastator*), COQUILLETT, Ins Life, v, p. 22, n. spp.
- Sarcotachinella*, n. g., *Tachinina*, p. 110, for *S. intermedia*, n. sp., Illinois, p. 111; TOWNSEND, Tr. Am. Ent. Soc. xix.
- Saundersia rubicunda*, New Grenada, WULF, p. 206, Tijdschr. Ent. xxxiv, n. sp.

- Siphoclytia*, n. g., *Thryptoceratina*, p. 116, for *S. robertsoni*, n. sp., Florida, p. 117; TOWNSEND, Tr. Am. Ent. Soc. xix.
- Siphophyto*, n. g., *Phytoina*, p. 127, for *S. floridensis*, *neomexicanus*, n. spp., N. America, p. 128; TOWNSEND, Tr. Am. Ent. Soc. xix.
- Synamphoneura africana*, Somaliland, BEZZI, p. 190, Ann. Mus. Genov. (2) xii, n. sp.
- Tachina*: application of the name and synonymy; BRAUER, pp. 602-606, SB. Ak. Wien, ci.
- T. orgyia*, p. 284, *tenthredinivora*, p. 285, N. America, TOWNSEND, Tr. Am. Ent. Soc. xix, n. spp.
- Tachinomyia*, n. g., *Tachinina*, for *T. robusta*, Michigan, p. 96, *floridensis*, Florida, p. 97, n. spp.; TOWNSEND, Tr. Am. Ent. Soc. xix.
- Tachinophyto*, n. g., *Phytoina*, p. 130, for *T. floridensis*, n. sp., Florida, p. 131; TOWNSEND, Tr. Am. Ent. Soc. xix.
- Thryptocera americana*, Washington, TOWNSEND, p. 69, Canad. Ent. xxiv, n. sp.
- Trixa gillettei*, Colorado, TOWNSEND, p. 68, Canad. Ent. xxiv, n. sp.
- Trizoclista*, n. g., *Tachinina*, p. 102, for *T. distincta*, n. sp., Illinois, p. 103; TOWNSEND, Tr. Am. Ent. Soc. xix.
- Tryphera americana*, p. 78, *polidoides*, p. 79, N. America; TOWNSEND, Canad. Ent. xxiv, n. spp.
- Vanderwulpia sequens*, New Mexico, TOWNSEND, p. 172, Canad. Ent. xxiv, n. sp.

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- Cryptomeigenia*, n. g. for *C. setifacies*, n. sp., Brazil, p. 311.
- Pseudoviviania*, n. g., p. 311, for *P. platypoda*, n. sp., Venezuela, p. 312.
- Masiphya*, n. g. for *M. brasiliana*, n. sp., Ypanema, p. 313.
- Alsopsyche*, n. g. for *A. nemoralis*, n. sp., Venezuela, p. 313.
- Conogaster*, n. g. for *Viviania nubilis*, Rond, p. 314.
- Megalocheta brachystoma*, Austria, p. 317, n. sp.
- Chetomyia*, n. g. for *Exorista crassiset*, Rond, p. 317.
- Dezodes machairopsis*, *eggeri*, *auripilus*, Europe, p. 316, n. spp.
- Parexorista raiblensis*, *tutschensis*, *intermedia*, *setosa*, *antennata*, *acrocheta*, p. 318, *clavellaria*, *magnicornis*, p. 320, *brevifrons*, p. 321, *gnava*, *dubia*, *blepharipoda*, p. 322, *grossa*, *trifasciata*, *irregularis*, p. 323 *latifrons*, p. 324, Europe, n. spp.
- Alsomyia*, n. g. for *A. gymnodiscus*, n. sp., Austria, p. 328.
- Paratryphera*, n. g. for *P. handlirschii*, n. sp., Tyrol, p. 328.
- Calacheta*, n. g. for *C. depressaria*, n. sp., Austria, p. 329.
- Blepharidopsis*, n. g. for *B. nemea*, Meig., p. 329.
- Bactromyia*, n. g. for *Masicera scutelligera*, Stein, p. 329.
- Pesomyia*, n. g. for *Raselia aberrans*, Egg., p. 329.
- Oeromasia rufipes*, *wulpai*, Europe, p. 330, n. spp.

- Leptotachina*, n. g. for *Oeromasia gratiosa*, Stein., p. 330.  
*Thelymyia*, n. g. for *T. lowii*, n. sp., Bohemia, p. 330.  
*Myxexorista*, n. g. for *M. pexops*, *flavipalpis*, *roseana*, n. spp., Europe, and others, p. 332.  
*Achatoneura*, n. g. for *A. hesperus*, n. sp., N. America, and others from Mexico, p. 334.  
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*Parasetigena*, n. g., p. 339 (no species).  
*Chatoprocta*, n. g., p. 341, for *C. tarsalis*, n. sp., Venezuela, p. 342.  
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- Agomyza lappæ*, metamorphoses ; LAMPA, Ent. Tidskr. xiii, pp. 117-120.  
*Cacozenus indagator*, characters of ; MIK, p. 182, Wien. ent. Z. xi : chætotaxy ; OSTEN-SACKEN, Berl. Ent. Zeit. xxxvi, p. 311.  
*Chlorops pumilionis*, life-history ; LAMPA, Ent. Tidskr. xiii, p. 257, pl. vii.  
*Cælopa æquatorialis*, Somaliland, BEZZI, p. 194, Ann. Mus. Genov. (2) xii, n. sp.  
*Drosophila lacteo-guttata*, W. Russia, PORTSCHINSKY, p. 226, pl. i, fig. 20, Hor. Ent. Ross. xxvi ; *D. nigropunctata*, Java, WULP, p. 216, Tijdschr. Ent. xxxiv : n. spp.  
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- Neottiophilum*: characters and systematic position discussed; RÖDER, p. 204, Ent. Nachr. xviii.
- Opomyza punctella*, Fall.: variation and characters noticed; SENTENIS, p. 177, Wien. ent. Z. xi.
- Paralimna javana*, Java, WULF, p. 215, pl. xii, fig. 17, Tijdschr. Ent. xxxiv, n. sp.
- Platyparea*? *terebratula*, E. Siberia, PORTSCHINSKY, p. 216, pl. i, fig. 9, Hor. Ent. Ross. xxvi, n. sp.
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- Pyrgota microcera*, Amur, PORTSCHINSKY, p. 212, pl. i, fig. 8, Hor. Ent. Ross. xxvi, n. sp.
- Sapromysa*: characters of the N. American; TOWNSEND, pp. 301-303, Canad. Ent. xxiv.
- S. ocellaris*, New Mexico, TOWNSEND, p. 303, Canad. Ent. xxiv; *S. miki*, p. 155, *styriaca*, p. 156, Austrian Alps, STROBL, Wien. ent. Z. xi: n. spp.
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- Phora*: remarks on characters, habits, and variation of the Austrian species; STROBL, pp. 193-204, Wien. ent. Z. xi.
- Phora crassicauda*, p. 194, *erythronota*, p. 195, *spinosissima*, p. 196, *pseudoconcinna*, p. 199, *nitidifrons*, p. 200, *xanthosoma*, p. 203, Austria STROBL, Wien. ent. Z. xi; *P. cimbicis*, p. 143, *setacea*, p. 144, *luggeri* p. 145, *minuta*, p. 146, Dakota, ALDRICH, Canad. Ent. xxiv
- P. omnivora*, New Zealand, HUDSON, Manual, p. 62, pl. vii, fig. 15 n. spp.

## PUPIPARA.

- The mouth parts of various *Pupipara*, including *Braula* and *Nycteribia* described; MÜGGENBURG, Arch. f. Nat. lviii, i, pp. 287-332 pla. xv & xvi.
- Trichobius dugesii*, note on; TOWNSEND, p. 177, Ent. News, iii.

## (E.) RHYNCHOTA.

## HEMIPTERA-HETEROPTERA.

[Cf. ASHMEAD (18A), BERG (56), BERGROTH (62-72), CARLINI (158), CARPENTER (159), DISTANT (210, 217, 218, 347), DUGÈS (229), FERRARI (281), FORBES (286), GERSTAECKER (323), HEIDEMANN (392), HORVÁTH (428-431), HUDSON (440), JAKOWLEFF (452), KARSCH (460, 465), LÉON (545), MOBERG (614), MONTANDON (617-620), PUTON (707, 708), REUTER (730-733), SCHLECHTENDAL (800), SHARP (842), TRYON (952).]

Homologies of the Hemipterous mouth, SMITH (866); and Homology of the trophi, LÉON (545).

Silurian fossil Hemipterous insect, MOBERG (614).

BERGROTH, Rev. d'Ent. xi, pp. 262-264, records many synonyms in view of the promised general Catalogue of *Hemiptera*; these it appears unnecessary for us to give in detail.

*Hemidiptera haeckeli*, LÉON, note on; BERGROTH, p. 169, Wien. ent. Z. xi.

## PENTATOMIDÆ.

*Alcimocoris potanini*, China, HORVÁTH, p. 134, Term füzetek, xv, n. sp.

*Antestia guttifera*, E. Africa, GERSTAECKER, p. 46, JB. Hamb. Anst. ix;

*A. transvaalia*, Transvaal, DISTANT, p. 251, pl. iii, fig. 6, Naturalist Transvaal: n. spp.

*Aphanopneuma stali*, Africa, = (*biloba*, Sign., Stal); MONTANDON, p. 297, Rev. d'Ent. xi, n. sp.

*Apotomogonius*, n. g., *Plataspidinæ*, p. 301, for *A. exornatus*, n. sp., Centr. Africa, p. 302; MONTANDON, Rev. d'Ent. xi.

*Arma prasina*, New Guinea, TRYON, p. 15, Ann. Queensland Mus. ii, n. sp.

*Asopus figuratus*, var. described and figured; DISTANT, p. 248, pl. iii, fig. 1, Naturalist Transvaal.

*A. glaucolimbata*, New Guinea, TRYON, p. 15, Ann. Queensland Mus. ii, n. sp.

*Aspongopus balinus*, W. Africa, KARSCH, p. 166, Ent. Nachr. xviii, n. sp.

*Basicryptus elongatus*, Transvaal, *antennatus*, E. Africa, DISTANT, p. 239, Ent. M. M. xxviii, n. spp.

*Brachyplatys flavosparsus*, Borneo, BERGROTH, p. 171, Wien. ent. Z. xi; *B. simplex*, *pusilla*, N. Guinea, TRYON, p. 13, Ann. Queensland Mus. ii: n. spp.

- Cintharodes nubilosus*, Congo, MONTANDON, p. 299, Rev. d'Ent. xi, n. sp.  
*Carpocoris alienus*, E. Siberia, REUTER, p. 176, Cefv. Finska. Förh. xxxiii, n. sp.  
*Caura superba*, W. Africa, KARSCH, p. 164, Ent. Nachr. xviii, n. sp.  
*Cermatulus pulcher*, New Guinea, TRYON, p. 15, Ann. Queensland Mus. ii, n. sp.  
*Chrysocoris nicobarensis*, Nicobar Is., DISTANT, Ent. xxv (Supp.), p. 96, n. sp.  
*Coptosoma atenes*, W. Africa, KARSCH, p. 129, Ent. Nachr. xviii. *C. sculpturatum*, Madagascar, p. 278, *nebulosum*, p. 279, *confusum*, p. 280, E. Africa, *parvipictum*, p. 281, *sordidulum*, p. 283, China, *lethierryi*, E. India, p. 284, MONTANDON, Rev. d'Ent. xi. *C. respersum*, Java, p. 171, *mundum*, p. 172, *lascicum*, p. 173, China, BERGROTH, Wien. ent. Z. xi : n. spp.  
*Derula delagrangiei*, Syria, PUTON, p. 25, Rev. d'Ent. xi, n. sp.  
*Dictyotus transversus*, Murray I., CARPENTER, p. 138, pl. xii, fig. 1, P. R. Dublin Soc. (n.s.) vii, n. sp.  
*Dolycoris rutherfordi*, Old Calabar, DISTANT, p. 187, Ent. M. M. xxviii, n. sp.  
*Edessa herrichi*, p. 45, *rugiventris*, p. 48, Argentine Rep., BERG, An. Soc. Arg. xxxiii, n. spp.  
*Ennius monteironis*, Delagoa Bay, DISTANT, p. 188, Ent. M. M. xxviii, n. sp.  
*Eysarcoris megaspiloides*, New Guinea, TRYON, p. 17, Ann. Queensland Mus. ii, n. sp.  
*Gonocerus juniperi*, n. var., *obtusangulus*, PUTON, p. 26, Rev. d'Ent. xi.  
*Halyomorpha bimaculata*, Sierra Leone, BERGROTH, p. 160, Ann. Ent. Belg. xxxvi. *H. capitata*, p. 249, pl. iii, fig. 3, *pretoriae*, p. 250, fig. 4, Transvaal, DISTANT, Naturalist Transvaal : n. spp.  
*Handhirschiella*, n. g., *Plataspidinae*, p. 294, for *H. aenea*, p. 295, *emarginata*, p. 296, n. spp., Africa ; MONTANDON, Rev. d'Ent. xi.  
*Holcostethus distanti*, S. Africa, BERGROTH, p. 160, Ann. Ent. Belg. xxxvi. *H. obscuratus*, Transvaal, DISTANT, p. 249, pl. iii, fig. 2, Naturalist Transvaal : n. spp.  
*Hymenomaga*, n. g., near *Tropicorypha*, for *T. formosa*, Dist., KARSCH, p. 130, Ent. Nachr. xviii.  
*Isoplatys*, n. g., *Plataspidinae*, for *I. flavonotatus*, n. sp., Gaboon ; MONTANDON, p. 303, Rev. d'Ent. xi.  
*Lyramorpha maculifer*, New Guinea, TRYON, p. 19, Ann. Queensland Mus. ii, n. sp.  
*Megymenum severini*, Bengal, BERGROTH, p. 504, Ann. Ent. Belg. xxxvi, n. sp.  
*Menida quadrimaculata*, Mongolia, HORVATH, p. 134, Term. füzetek, xv, n. sp.  
*Nezara abnormis*, Buenos Aires, p. 7, *vicina*, p. 8, *fucosa*, p. 9, Argentine Rep., BERG, An. Soc. Arg. xxxiii, n. spp.  
*Odontotarsus horvathi*, N. Africa, PUTON, p. 24, Rev. d'Ent. xi, n. sp.

- Orthoschizops plagosa*, S. Africa, DISTANT, p. 238, Ent. M. M. xxviii, n. sp.  
*Patanocnema*, n. g., near *Aspongopus*, for *P. ovata*, n. sp., W. Africa ;  
 KARSCH, p. 130, Ent. Nachr. xviii.  
*Pelioderma*, n. g. *Plataspidinae*, for *P. æthiops*, n. sp., W. Africa,  
 BERGROTH, p. cclv, Bull. Soc. Ent. Fr. lxi.  
*Pentatoma* (*Cappæa*) *pretoria*, E. Africa, GERSTAECKER, JB. Hamb. Anst.  
 ix, p. 46 ; *P. submarginalis*, p. 16, *maculifer*, *prasina*, p. 17, New  
 Guinea, TRYON, Ann. Queensland Mus. ii : n. spp.  
*Peromatus sulcifer*, Argentine Rep., BERG, p. 43, An. Soc. Arg. xxxiii,  
 n. sp.  
*Philia ærea*, Australia, DISTANT, Ent. xxv (Supp.), p. 96, n. sp.  
*Phimodera mongolica*, E. Siberia, REUTER, p. 173, Öfv. Finska Förh.  
 xxxiv, n. sp.  
*Piezosternum subulatum*, egg figured ; SHARP, pl. viii, fig. 9, Tr. E. Soc. 1892.  
*Plataspis gambeyi*, Gaboon, p. 273, *plagifera*, Guinea, p. 275, *guttulata*,  
 Gaboon, p. 276, *conspersa*, Madagascar, p. 277, MONTANDON, Rev.  
 d'Ent. xi, n. spp.  
*Platyatus*, n. g. (*Eustheninae*), p. 158, for *P. ambiguus*, n. sp., Madagascar,  
 p. 159 ; BERGROTH, Ent. M. M. xxviii.  
*Pododus striatus*, S. Africa, DISTANT, p. 238, Ent. M. M. xxviii, n. sp.  
*Pæcilochroma balteata*, E. India, DISTANT, Ent. xxv (Supp.), p. 96, n. sp.  
*Ponsila severini*, Centr. Africa, MONTANDON, p. 304, Rev. d'Ent. xi, n. sp.  
*Schizops icterica*, E. Africa, GERSTAECKER, p. 47, JB. Hamb. Anst. ix,  
 n. sp.  
*Sehirus biguttatus*, n. var. *tibialis* ; PUTON, p. 25, Rev. d'Ent. xi : n. var.  
*concolor* ; NICKERL, p. 62, S. E. Z. liii.  
*Sephela morosa*, E. Africa, GERSTAECKER, p. 45, JB. Hamb. Anst. ix,  
 n. sp.  
*Solenosthedium madagascariensis*, Madagascar, DISTANT, p. 187, Ent. M. M.  
 xxviii, n. sp.  
*Spudæus variabilis*, New Guinea, TRYON, p. 18, Ann. Queensland Mus.  
 ii, n. sp.  
*Tesseratoma hornimani* and allies, characters noticed ; DISTANT, p. 188,  
 Ent. M. M. xxviii.  
*Tiarocoris luminatus*, Malacca, MONTANDON, p. 307, Rev. d'Ent. xi, n. sp.  
*Uhlunga*, n. g. (*Pentatominae*), for *U. typica*, n. sp., Natal ; DISTANT,  
 p. 237, Ent. M. M. xxviii.  
*Vaterna patula*, Transvaal, DISTANT, p. 250, pl. iii, fig. 5, Naturalist  
 Transvaal, n. sp.

## COREIDÆ.

- Acanthocephala granulosa*, Dall., = (*luctuosa*, Stål) ; DISTANT, p. 359,  
 Biol. Centr. Am. Rhynch. Heter.  
*Anasa montivaga*, p. 366, pl. xxxiii, fig. 19, *delibata*, fig. 17, *decretoria*,  
 fig. 16, *versicolor*, fig. 18, p. 367, Centr. America, DISTANT, Biol.  
 Centr. Am. Rhynch. Heter. ; *A. limbata*, p. 97, *declivicollis*, p. 153,  
 Argentine Rep., BERG, An. Soc. Arg. xxxiii : n. spp.  
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- Archimerus chiriquinus*, Panama, DISTANT, p. 355, pl. xxxiii, fig. 4, Biol. Centr. Am. Rhynch. Heter., n. sp.
- Athaumastus subfoveolatus*, Argentine Rep., BERG, p. 66, An. Soc. Arg. xxxiii, n. sp.
- Bardistus serrulatus*, figured, pl. xxxiii, fig. 7, Biol. Centr. Am. Rhynch. Heter.
- B. formidabilis*, Panama, DISTANT, p. 357, pl. xxxiii, fig. 9, Biol. Centr. Am. Rhynch. Heter., n. sp.
- Capaneus chontalensis*, Nicaragua, pl. xxxiii, fig. 3, *humerosus*, fig. 5, Mexico, DISTANT, p. 354, Biol. Centr. Am. Rhynch. Heter., n. spp.
- Catorhintha sinuatipennis*, Buenos Aires, BERG, p. 152, An. Soc. Arg. xxxiii, n. sp.
- Cebrenis rubro-conspersa*, Argentine Rep., BERG, An. Soc. Arg. xxxiii, p. 99, n. sp.
- Charisterus robustus*, Mexico, pl. xxxiii, fig. 12, *cuspidatus*, Panama, fig. 14, DISTANT, p. 364, Biol. Centr. Am. Rhynch. Heter., n. spp.
- Diactor bogotanus*, figured, pl. xxxiii, fig. 8, Biol. Centr. Am. Rhynch. Heter.
- Dulichius*, Stål, = (*Formicoris*, Kirb.); BERGROTH, p. 225, Wien. ent. Z. xi.
- D. wroughtoni*, E. India, BERGROTH, p. 107, Ent. M. M. xxviii [*D.* (sub *Formicoris*) *inflatus*, Kirby, = (*wroughtoni*), BERGROTH, t. c. p. 126], n. sp.
- Elaemornema*, n. g., near *Mictis*, for *E. limpidipennis*, n. sp., W. Africa; KARSCH, p. 131, Ent. Nachr. xviii.
- Homoeocerus vicarians*, Cameroons, KARSCH, p. 132, Ent. Nachr. xviii, n. sp.
- Hormambogaster*, n. g., near *Dulader*, for *H. expansus*, n. sp., W. Africa; KARSCH, p. 131, Ent. Nachr. xviii.
- Hypselonotus bitrianguliger*, Argentine Rep., BERG, p. 101, An. Soc. Arg. xxxiii, n. sp.
- Laminiceps quadrisignata*, Central America, DISTANT, p. 360, pl. xxxiii, fig. 11, Biol. Centr. Am. Rhynch. Heter., n. sp.
- Leptoglossus dentatus*, p. 68, *impressicollis*, p. 69, *concavisculus*, p. 70, Argentine Rep., BERG, An. Soc. Arg. xxxiii, n. spp.
- Melucha quinquelineata*, figured, pl. xxxiii, fig. 2, Biol. Centr. Am. Rhynch. Heter.
- M. bicolor*, Guatemala, DISTANT, p. 353, pl. xxxiii, fig. 1, Biol. Centr. Am. Rhynch. Heter., n. sp.
- Mictis lutea*, E. Africa, GERSTAECKER, p. 48, JB. Hamb. Anst. ix, n. sp.
- Myrmus calcaratus*, E. Siberia, REUTER, p. 181, Cefv. Finska Förh. xxxiii, n. sp.
- Narnia inornata*, Mexico, DISTANT, p. 361, pl. xxxiii, fig. 10, Biol. Centr. Am. Rhynch. Heter., n. sp.
- Ojedana*, n. g., near *Archimerus*, p. 355, for *O. loricata*, n. sp., Panama p. 356, p. xxxiii, fig. 6, DISTANT, Biol. Centr. Am. Rhynch. Heter.

- Ooengua*, n. g. (*Daladeraria*), for *O. aperta*, n. sp., Old Calabar : DISTANT, Ent. M. M. xxviii, p. 285.
- Plinachtus falcatus*, Transvaal, DISTANT, p. 251, pl. iii, fig. 8, Naturalist Transvaal, n. sp.
- Prismatocerus* (*Philonus*) *hæmatocerus*, E. Africa, GERSTÆCKER, p. 48, JB. Hamb. Anst. ix, n. sp.
- Rhopalus* (*Stictopleurus*) *nysioides*, p. 178, *R. (Æschyntales)* *robustus*, p. 179, E. Siberia, REUTER, Cefv. Finska Förh. xxxiii, n. spp.
- Savius diagonalis*, Corrientes, BERG, p. 102, An. Soc. Arg. xxxiii, n. sp.
- Sethenira uruguayensis*, S. America, BERG, p. 71, An. Soc. Arg. xxxiii, n. sp.
- Spartocera gigantea*, Costa Rica, DISTANT, p. 363, pl. xxxiii, fig. 13, Biol. Centr. Am. Rhynch. Heter., n. sp.
- Vilga mexicana*, Omilteme, DISTANT, p. 368, pl. xxxiii, fig. 20, Biol. Centr. Am. Rhynch. Heter., n. sp.
- Zicca castanea*, Argentine Rep., BERG, p. 98, An. Soc. Arg. xxxiii, n. sp.

## LYGÆIDÆ, PYRRHOCORIDÆ.

- Antilochus violaceus*, Somaliland, CARLINI, p. 532, Ann. Mus. Genov. (2) xii, n. sp.
- Beosus hoplites*, E. Africa, GERSTÆCKER, p. 49, JB. Hamb. Anst. ix, n. sp.
- Cæneus* ? *exsanguis*, Zanzibar, GERSTÆCKER, p. 50, JB. Hamb. Anst. ix, n. sp.
- Dysdercus festivus*, E. Africa, GERSTÆCKER, p. 50, JB. Hamb. Anst. ix ; *D. melanoderes* (Germ.), Cameroons, KARSCH, p. 133, Ent. Nachr. xviii : n. spp.
- Geocoris putonianus*, n. n. for *G. piceus* infrà ; BERGROTH, Rev. d'Ent. xi, p. 264.
- G. henoni*, Cairo, PUTON, p. 26, Rev. d'Ent. xi ; *G. (Piocoris)* *piceus*, Turkestan, PUTON, p. 72, t. c. : n. spp.
- Henestaris irroratus*, S. France, HORVATH, p. 136, Rev. d'Ent. xi, n. sp.
- Ichnodemus atricolor*, Uruguay, BERG, p. 158, An. Soc. Arg. xxxiii, n. sp.
- Ichnopesa pallipes*, Biskra, PUTON, p. 27, Rev. d'Ent. xi ; *I. flavogrisea*, Somaliland, CARLINI, p. 530, Ann. Mus. Genov. (2) xii : n. spp.
- Lamprodema rufipes*, E. Siberia, REUTER, p. 182, Cefv. Finska Förh. xxxiii, n. sp.
- Lygæus* (*Melanocoryphus*) *heydeni*, Turkestan, PUTON, p. 71, Rev. d'Ent. xi ; *L. planitia*, pl. iii, fig. 7, *desertus*, fig. 9, p. 252, *campestris*, p. 253, fig. 10, Transvaal, DISTANT, Naturalist Transvaal : n. spp.
- Myrmoplasta*, n. g., *Pyrrhocoridae*, for *M. mira*, n. sp., E. Africa, GERSTÆCKER, p. 51, JB. Hamb. Anst. ix.
- Nysius novitius*, Transvaal, DISTANT, p. 254, pl. iii, fig. 11, Naturalist Transvaal ; *N. gibbifer*, p. 155, *ellipticus*, p. 156, Arg. Rep., BERG, An. Soc. Arg. xxxiii : n. spp.



*Ælancala* (sub *Pamera*) *dorsalis*, Say, = (*dorsilinea*, Am. & Serv.) ; BERG, p. 160, An. Soc. Arg. xxxiii.

*Oncopeltus bueanus*, Cameroona, KARSCH, p. 132, Ent. Nachr. xviii, n. sp.  
*Pamera procerula*, p. 162, *sororcula*, p. 163, Buenos Aires, BERG, An. Soc. Arg. xxxiii, n. spp.

*Peritrechus* : characters of the Russian species ; JAKOWLEFF, p. 228, Hor. Ent. Ross. xvi.

*P. insignis*, Derbent, JAKOWLEFF, p. 231, Hor. Ent. Ross. xvi, n. sp.

*Phygadicus australis*, Murray L., CARPENTER, p. 140, pl. xii, fig. 2, P. B. Dublin Soc. (n.s.) vii, n. sp.

*Pyrrhopleplus carduelis*, n. var. *posthumus*, HORVÁTH, p. 135, Term. füzetek, xv.

*Rhyparochromus puncticollis*, n. var. *nigripes*, HORVÁTH, p. 138, Rev. d'Ent. xi.

*Scolopostethus* : characters of the palaearctic species, and synonymical list ; HORVÁTH, pp. 253-256, Rev. d'Ent. xi.

*S. patruelis*, S. France, HORVÁTH, p. 138, Rev. d'Ent. xi, n. sp.

*Sericocoris*, n. g., p. 132 (*Pyrrhocorides*), for *S. acromelanthes*, n. sp., Cameroona, p. 133, KARSCH, Ent. Nachr. xviii.

*Transvaalia*, n. g., for *T. lugens*, n. sp., Transvaal, pl. iii, fig. 12 ; DISTANT, p. 253, Naturalist Transvaal.

*T. flarescens*, Pretoria, DISTANT, Ent. M. M. xxviii, p. 285.

#### TINGITIDÆ.

*Campylostira* : revision of species with characters and varr. described ; HORVÁTH, pp. 309-313, Wien. ent. Z. xi.

*C. bornica*, p. 309, Bosnia, *eximia*, Turkestan, p. 311, HORVÁTH, Wien. ent. Z. xi, n. spp.

*Cyclothyaspis*, n. g., *Cantacaderaria*, for *C. acalyptoides*, n. sp., Singapore ; MONTANDON, Rev. d'Ent. xi, p. 265.

*Dictyonotus* (*Elina*) *henschi*, Budapest, PUTON, p. 72, Rev. d'Ent. xi, n. sp.

*Eurycera glabricornis*, Mozambique, MONTANDON, p. 267, Rev. d'Ent. xi, n. sp.

*Leptostyla carmeluna*, Uruguay, BERG, p. 200, An. Soc. Arg. xxxiv, n. sp.

#### ARADIDÆ.

*Aneurus indicus*, Burma, BERGROTH, p. 717, Ann. Mus. Genov. (2) xii, n. sp.

*Aradus similis*, var., = (*centriguttatus*), p. 332, list of the N. American *Aradidæ*, pp. 335 & 336 ; BERGROTH, P. E. Soc. Wash. ii.

*A. mirabilis*, Burma, BERGROTH, p. 710, Ann. Mus. Genov. (2) xii ; *A. duzei*, Ontario, p. 333, *concinus*, California, p. 337, BERGROTH, P. E. Soc. Wash. ii : n. spp.

*Artabanus excelsus*, ♂, with stridulating area, described ; BERGROTH, p. 806, Ann. Mus. Genov. (2) xii.

- A. excelsus, setulosus*, p. 713, *sexspinosus*, p. 714, Burma, BERGROTH, Ann. Mus. Genov. (2) xii, n. spp.
- Brachyrrhynchus verruciger*, Amurland, BERGROTH, p. 261, Rev. d'Ent. xi; *B. undulatus*, Bengal, BERGROTH, p. 504, Ann. Ent. Belg. xxxvi; *B. tenericornis*, Burma, BERGROTH, p. 716, Ann. Mus. Genov. (2) xii : n. spp.
- Carventus gestroi*, Burma, BERGROTH, p. 712, Ann. Mus. Genov. (2) xii, n. sp.
- Lobocura*, n. g. for *L. oblonga*, Argentine Rep., p. 259, *ovata*, Mexico, p. 260, n. spp.; BERGROTH, Rev. d'Ent. xi.
- Neuroctenus debilicornis*, Gaboon, MONTANDON, p. 268, Rev. d'Ent. xi, n. sp.
- Pictinus asiaticus*, Burma, BERGROTH, p. 716, Ann. Mus. Genov. (2) xii; *P. modiglianii, pusio*, Engano, BERGROTH, p. 807, *t. c.* : n. spp.

#### HYDROMETRIDÆ.

- Gerris (Tenagonus) hypoleuca*, E. Africa, GERSTAECKER, p. 55, JB. Hamb. Anst. ix, n. sp.
- Halobates regalis*, Mabuiag, CARPENTER, p. 144, pl. xiii, figs. 1-8, P. R. Dublin Soc. (n.s.) vii, n. sp.
- Hermatobates*, n. g., p. 142, for *H. haddonii*, n. sp., Mabuiag, p. 143, pl. xii, figs. 4-8; CARPENTER, P. R. Dublin Soc. (n.s.) vii.
- Limnometra lineata*, Mabuiag, CARPENTER, p. 141, pl. xii, fig. 3, P. R. Dublin Soc. (n.s.) vii, n. sp.
- Tenagonus*, subg. (n. ?) of *Gerris*; GERSTAECKER, p. 56, JB. Hamb. Anst. ix.

#### REDUVIIDÆ.

- Eggs of a *Reduviid* described and figured with micropyle (?) apparatus; SHARP, Tr. E. Soc. 1892, p. 191, pls. viii & ix.
- Acanthaspis armata*, Somaliland, CARLINI, p. 535, Ann. Mus. Genov. (2) xii, n. sp.
- Cleptria bicolor*, S. Africa, BERGROTH, p. 162, Ann. Ent. Belg. xxxvi, n. sp.
- Coranus longiceps*, S. Africa, BERGROTH, p. 161, Ann. Ent. Belg. xxxvi; *C. hammarstroemii*, Mongolia, REUTER, p. 184, Öfv Finska Förh. xxxiii; *C. löczyi*, Calcutta, HORVÁTH, p. 135, Term. füzetek. xv : n. spp.
- Ectrichodia problematica*, E. Africa, GERSTAECKER, p. 54, JB. Hamb. Anst. ix, n. sp.
- Ectrychotes jakowleffi*, China, HORVÁTH, p. 136, Term. füzetek. xv, n. sp.
- Endochus africanus*, W. Africa, BERGROTH, p. 161, Ann. Ent. Belg. xxxvi, n. sp.
- Enicocephalus*: note on, and on *Hymenodectes*, Uhl.; ASHMEAD, p. 329, P. E. Soc. Wash. ii.

- Formicoris*, Kirby, is the same as *Dulichius*; BERGROTH, Ent. M. M. xxviii, p. 126.
- Henicocephalus*, = (*Dicephalus*, Kirb.); BERGROTH, p. 225, Wien. ent. Z. xi.
- Holotrichius henoni*, Suez, PUTON, p. 27, Rev. d'Ent. xi, n. sp.
- Ichnobana preussi*, W. Africa, KARSCH, p. 136, Ent. Nachr. xviii, n. sp.
- Laphyctes* ? *brachialis*, E. Africa, GERSTAECKER, p. 52, JB. Hamb. Anst. ix, n. sp.
- Leptodema*, n. g. for *L. hirtum*, p. 533, *acanthocephalum*, p. 534, n. spp., Trop. Africa; CARLINI, Ann. Mus. Genov. (2) xii.
- Onccephalus insignis*, E. Africa, GERSTAECKER, p. 55, JB. Hamb. Anst. ix; *O. vaulogeri*, Algeria, MONTANDON, p. 272, Rev. d'Ent. xi: n. spp.
- Marenaspis*, n. g. *Ectrichodiides*, for *M. typhlops*, n. sp., Cameroons; KARSCH, p. 134, Ent. Nachr. xviii.
- Miomeroerus*, n. g. *Ectrichodiides*, for *M. scopaceus*, n. sp., Cameroons; KARSCH, p. 135, Ent. Nachr. xviii.
- Nagusta junodi*, Mozambique, MONTANDON, p. 269, Rev. d'Ent. xi, n. sp.
- Phonoconus principalis*, E. Africa, GERSTAECKER, p. 52, JB. Hamb. Anst. xi, n. sp.
- Pirates brachypterus*, p. 54, *morosus*, *collaris*, p. 55, E. Africa, GERSTAECKER, JB. Hamb. Anst. ix; *P. conspurcatus*, Transvaal, DISTANT, p. 255, pl. ii, fig. 10, Naturalist Transvaal: n. spp.
- Ploiaria melanacantha*, Carcassonne, HORVÁTH, p. 139, Rev. d'Ent. xi, n. sp.
- Polymazus*, n. g., p. 52, for *P. singularis*, n. sp., E. Africa, p. 53; GERSTAECKER, JB. Hamb. Anst. ix.
- Raphidosoma echinatum*, E. Africa, GERSTAECKER, p. 54, JB. Hamb. Anst. ix, n. sp.
- Reduvius polystictus*, E. Africa, GERSTAECKER, p. 53, JB. Hamb. Anst. ix; *R. notabilipes*, Obock, MONTANDON, p. 271, Rev. d'Ent. xi; *R. pulvisculatus*, pl. ii, fig. 3, *sertus*, fig. 8, p. 254, *capitalis*, p. 255, fig. 1, Transvaal, DISTANT, Naturalist Transvaal: n. spp.
- Rhochomogaster*, n. g. *Ectrichodiides*, for *R. dimerus*, n. sp., Cameroons; KARSCH, p. 135, Ent. Nachr. xviii.
- Santonia semistriata*, Cameroons, KARSCH, p. 135, Ent. Nachr. xviii, n. sp.
- Sastrapada novæguinensis*, Fergusson L., TRYON, p. 23, Ann. Queensland Mus. ii, n. sp.
- Sphedanolesthes fenestriculatus*, W. Africa, KARSCH, p. 134, Ent. Nachr. xviii, n. sp.
- Vadimon bergrothi*, Mozambique, MONTANDON, p. 270, Rev. d'Ent. xi, n. sp.

## SALDIDÆ, CIMICIDÆ.

- Acanthia*: notes on the species of, in N. America; OSBORN, p. 262, Canad. Ent. xxiv.
- A. inodora*, Mexico, DUGÈS, p. 169, pl. viii, n. sp.

*Anthocoris carinulatus*, Madagascar, REUTER, p. 186, Ent. M. M. xxviii, n. sp.

*Xyllocoris humeralis*, Sign., referred to *Lasiochilus*, and redescribed; REUTER, p. 186, Ent. M. M. xxviii.

## CAPSIDÆ.

Food-plants of *Capsidæ*, near Washington; HEIDEMANN (392).

*Antias lucidus*, Argentine Rep., BERG, p. 95, An. Soc. Arg. xxxiii, n. sp.

*Arsinotus*, n. g. (*Bryocoraria*), for *A. albipes*, n. sp., Buenos Aires; BERG, p. 198, An. Soc. Arg. xxxiv.

*Brachycoleus steini*, n. var. *thoracicus*; PUTON, p. 29, Rev. d'Ent. xi.

*Calocoris humeralis*, p. 89, *lineolatus*, p. 90, Argentine Rep., BERG, An. Soc. Arg. xxxiv, n. spp.

*Camponotidea saundersi*, macropterous form; PUTON, p. 28, Rev. d'Ent. xi.

*Capsus delagrangi*, Syria, PUTON, p. 29, Rev. d'Ent. xi, n. sp.

*Chrysodasia*, n. g. near *Lygus*, p. 400, for *C. strigifrons*, n. sp., Venezuela, p. 401; REUTER, Ann. Soc. Ent. Fr. lxi.

*Cyrtocapsus femoralis*, Venezuela, REUTER, p. 394, Ann. Soc. Ent. Fr. lxi, n. sp.

*Dolichomeris tibialis*, Venezuela, REUTER, p. 392, Ann. Soc. Ent. Fr. lxi, n. sp.

*Eccritotarsus luculentus*, p. 195, *nigriclavus*, p. 196, Argentine Rep., BERG, An. Soc. Arg. xxxiv, n. spp.

*Fulvius simoni*, Venezuela, REUTER, p. 391, Ann. Soc. Ent. Fr. lxi, n. sp.

*Halticus minutus*, injurious in Cochin-China; GIAUD (337).

*Helopeltis bergrothii*, Gaboon, REUTER, p. 159, Ent. M. M. xxviii, n. sp.

*Iecknias*, n. g. (*Capsaria*), p. 193, for *I. saltensis*, n. sp., Argentine Rep., p. 194; BERG, An. Soc. Arg. xxxiv.

*Linocerocoris*, n. g. near *Eucerocoris*, for *L. cariniventris*, n. sp., Cameroons, KARSCH, p. 133, Ent. Nachr. xviii.

*Lopus flavomarginatus*, n. var., *luctuosus*; PUTON, p. 29, Rev. d'Ent. xi.

*Lygus aeruginosus*, p. 92, *phaleratus*, p. 93, Argentine Rep., BERG, An. Soc. Arg. xxxiv, n. spp.

*Mecomma madagascariensis*, Madagascar, REUTER, p. 185, Ent. M. M. xxviii, n. sp.

*Oncognathus binotatus*, habits; HOWARD, Ins. Life, v, pp. 90-92, figg.

*Orinonotus*, n. subg., vide *Physetonotus* infra.

*Orthotylus ochrotrichus*, = (*propinquus*, Reut.); SAUNDERS, Ent. M. M. xxviii, p. 125.

*Perissobasis*, n. g., *Perissobasaria* (nov. divisio), p. 397, for *P. aurora*, n. sp., Venezuela, p. 398, REUTER, Ann. Soc. Ent. Fr. lxi.

*Physetonotus*, n. g., with n. subg. *Orinonotus*, and with *P. (O.) simoni*, n. sp., Venezuela; REUTER, p. 395, Ann. Soc. Ent. Fr. lxi.

*Phytocoris riparium*, N. Italy, FERRARI, Ann. Mus. Genov. (2) xii; *P. bergrothi*, p. 398, *tripunctatus*, p. 399, Venezuela, REUTER, Ann. Soc. Ent. Fr. lxi: n. spp.

- Paciloscytus rubricuneus*, Argentine Rep., BERG, p. 94, An. Soc. Arg. xxxiv, n. sp.  
*Pristoneura*, n. g., *Bryocoraria*, for *P. picea*, n. sp., Venezuela; REUTER, Ann. Soc. Ent. Fr. lxi, p. 396.  
*Resthenia* (*Callichila*) *occipitalis*, p. 83, *R. (R.) hirtula*, p. 84, *dissociata*, p. 87, Argentine Rep., BERG, An. Soc. Arg. xxxiv, n. spp.  
*Schizonotus*, n. g., *Cyllocoraria*, p. 401, for *S. dromedarius*, n. sp., Caracas, p. 402; REUTER, Ann. Soc. Ent. Fr. lxi.  
*Stenodema lateralis*, E. Siberia, REUTER, p. 187, Öfv. Finska Förh. xxxiii, n. sp.

## HYDROCORISÆ.

- Aphelochirus sinensis*, Ho-Chan, MONTANDON, p. 73, Rev. d'Ent. xi, n. sp.  
*Coriza zealandica*, New Zealand, HUDSON, Manual, p. 120, pl. xx, fig. 5, n. sp.  
*Enithares compacta*, E. Africa, GERSTAECKER, p. 57, JB. Hamb. Anst. ix;  
*E. bergrothi*, New Caledonia, MONTANDON, p. 75, Rev. d'Ent. xi : n. spp.  
*Iaccotrephes ellipticus*, E. Africa, GERSTAECKER, p. 56, JB. Hamb. Anst. ix, n. sp.  
*Mononyx asiaticus*, China, HORVÁTH, p. 136, Term. füzetek, xv, n. sp.  
*Notonecta* : fossil noticed; SCHLECHTENDAL (800).  
*Ranatra* : characters of the Palearctic species; BERGROTH, p. 127, Rev. d'Ent. xi.  
*R. nodiceps*, E. Africa, GERSTAECKER, p. 57, JB. Hamb. Anst. ix, n. sp.

## HEMIPTERA-HOMOPTERA.

- [Cf. CARLINI (158), DISTANT (210-215), DUZEE (233-237), FERRARI (281), GERSTAECKER (323), GODING (345, 346), HORVÁTH (428), HUDSON (440), LETHIERRY (549, 550), PUTON (707, 708), SLINGERLAND (851), TOWNSEND (945), and *Coccidæ*, p. 317.]

## CICADIDÆ.

- Bæturia bicolorata*, N. Guinea, DISTANT, p. 316, Ann. N. H. (6) ix, n. sp.  
*Callipsaltria bicolorata*, S. Africa, DISTANT, p. 318, Ann. N. H. (6) ix, n. sp.  
*Carineta tracta*, p. 320, *centralis*, Ecuador, *matura*, Venezuela, p. 321, DISTANT, Ann. N. H. (6) ix, n. spp.  
*Cicada viridis*, Fab., = (*D. mixta*, Kirby); DISTANT, p. 325, Ann. N. H. (6) ix.  
*C. flammata*, Japan, DISTANT, p. 99, pl. xiii, fig. 15, Mon. Or. Cicad.;  
*C. extrema*, Swan River, p. 56, *madagascariensis*, Madagascar, p. 57, DISTANT, Ann. N. H. (6) x; *C. timorensis*, Timor, DISTANT, p. 406, Ann. N. H. (6) x; *C. iolanthe*, New Zealand, HUDSON, Manual, p. 119, pl. xx, fig. 3 : n. spp.

- Cosmopsaltria fœx*, p. 101, *ficulnea*, p. 102, Burma, DISTANT, Mon. Or. Cicad., n. spp.
- Dorachosa*, n. g., p. 63, near *Tibicen*, for *D. explicata*, n. sp., Panama, p. 64; DISTANT, Ann. N. H. (6) x.
- Dundubia mixta*, note on; KIRBY, p. 304, Wien. ent. Z. xi.
- Fidicina mülleri*, Brazil, DISTANT, p. 319, Ann. N. H. (6) ix; *F. amazona*, Ega, bogotana, Bogota, p. 58, *rubricata*, Brazil, p. 59, DISTANT, Ann. N. H. (6) x : n. spp.
- Gæana* and its species, characters of, with figures of numerous species; DISTANT, pp. 104–108, Mon. Or. Cicad.
- Graptotettix thoracica*, Burma, DISTANT, p. 315, Ann. N. H. (6) ix, n. sp.
- Huechys*: the species described, and most of them figured; DISTANT, pp. 111–116, Mon. Or. Cicad.
- H. fusca*, p. 114, pl. iii, fig. 7, *lutulenta*, p. 115, pl. xiv, fig. 1, *dohertyi*, p. 116, fig. 2, Borneo, DISTANT, Mon. Or. Cicad., n. spp.
- Kanakia*, n. g., near *Malagasias*, for *K. typica*, n. sp., New Caledonia; DISTANT, p. 62, Ann. N. H. (6) x.
- Lembeja*, n. n., to replace *Perissoneura*; DISTANT, p. 103, Mon. Or. Cicad.
- Leptopsaltria japonica*, Japan, HORVÁTH, p. 136, Term. füzetek, xv; *L. morrisi*, E. India, DISTANT, p. 101, Mon. Or. Cicad., n. spp.
- Masupha*, n. g., near *Cicadatra*, for *M. ampliata*, p. 317, *delicata*, p. 318, n. spp., S. Africa; DISTANT, Ann. N. H. (6) ix.
- Melampsalta*: synonymy of New Zealand species, *nervosa*, Wlk., = (*cassiope*, Huds.); DISTANT, pp. 326 & 327, Ann. N. H. (6) ix. *M. nervosa*, Walk., = (*mangu*, White); DISTANT, p. 67, Ann. N. H. (6) x.
- M. exæquata*, Naga Hills, DISTANT, p. 144, pl. xv, fig. 11, Mon. Or. Cicad; *M. labeculata*, Australia, DISTANT, p. 66, Ann. N. H. (6) x; *M. convicta*, Norfolk I., *rosacea*, New Caledonia, p. 322, *abdominalis*, *extrema*, p. 323, Australia, *rotundata*, S. Africa, p. 324, DISTANT, op. cit. ix : n. spp.
- Mogannia*: the species described and figured; DISTANT, Mon. Or. Cicad. pp. 119–122.
- M. effecta*, E. India, DISTANT, Ann. N. H. (6) ix, p. 316, n. sp.
- Platypleura testacea*, Somaliland, CARLINI, p. 537, Ann. Mus. Genov. (2) xii, n. sp.
- Pacilopsaltria trimeni*, p. 313, *peringueyi*, p. 314, S. Africa, DISTANT, Ann. N. H. (6) ix, n. spp.
- Pomponia ransonneti*, Dist., = (*greeni*, Kirby); DISTANT, p. 325, Ann. N. H. (6) ix.
- P. japonensis*, Japan, DISTANT, p. 102, Mon. Or. Cicad., n. sp.
- Psaltoda flavescens*, Australia, DISTANT, p. 55, Ann. N. H. (6) x, n. sp.
- Psilotympana infuscata*, S. Africa, DISTANT, p. 319, Ann. N. H. (6) ix, n. sp.
- Talainga binghami*, figured; DISTANT, pl. xiii, fig. 4, Mon. Or. Cicad.
- Terpnosia*, n. g., near *Pomponia*, *T. psecas*, Wlk., = (*P. elegans*, Kirby); DISTANT, p. 325, Ann. N. H. (6) ix.

- T. pryori*, p. 139, pl. xv, fig. 5, Japan, *andersoni*, p. 141, pl. ix, fig. 13, China, DISTANT, Mon. Or. Cicad., n. spp.
- Tettigades parva*, Argentine Rep., BERG, p. 65, Ann. N. H. (6) x, n. sp.
- Thopha sessiliba*, Australia, DISTANT, p. 314, Ann. N. H. (6) ix, n. sp.
- Tibicen primitiva*, Wlk., = (*hamatina*, Stål), *monilifera*, Wlk., = (*maculinervis*, Stål); DISTANT, p. 325, Ann. N. H. (6) ix. *T. nubifurca*, Wlk., = (*apicalis*, Kirby); DISTANT, p. 325, & c. *T. putoni*, n. n. for *lacteipennis*, Puton; DISTANT, p. 67, *op. cit.* x.
- T. (Quintilia) wealei*, S. Africa, DISTANT, p. 316, Ann. N. H. (6) ix; *T. egæ*, Amazona, p. 64, *pumilus*, New Caledonia, p. 65, DISTANT, *op. cit.* x : n. spp.
- Tympanoterpes sodalis*, Wlk., = (*Fid. vultur*, Wlk.); DISTANT, p. 67, Ann. N. H. (6) x.
- T. colombica*, Bogota, p. 60, *bergi*, Argentine Rep. p. 61, DISTANT, Ann. N. H. (6) x, n. spp.

## FULGORIDÆ.

- Birdantis pallescens*, Batchian, DISTANT, p. 276, Tr. E. Soc. 1892, n. sp.
- Copsyrna ochracea*, Perak, DISTANT, p. 286, Tr. E. Soc. 1892, n. sp.
- Cenestra ligata*, Perak, pl. xiii, fig. 3, *copulanda*, Java, DISTANT, p. 285, Tr. E. Soc. 1892, n. spp.
- Cynthila viridimaculata*, Perak, DISTANT, p. 275, Tr. E. Soc. 1892, n. sp.
- Dardus albomaculatus*, p. 282, *obscurus*, p. 283, Australia, DISTANT, Tr. E. Soc. 1892, n. spp.
- Delphax lugubris*, ♀ noticed; LETHIERRY, p. 70, Rev. d'Ent. xi.
- Desudaba maculata*, Australia, DISTANT, p. 277, Tr. E. Soc. 1892, n. sp.
- Dichoptera nubila*, p. 277, *hampsoni*, E. India, *nasuta*, Celebes, p. 278, DISTANT, Tr. E. Soc. 1892, n. spp.
- Dictyophora unicolor*, n. var. *vittata*, PUTON, p. 30, Rev. d'Ent. xi.
- D. fuminervis*, E. India, LETHIERRY, p. 208, Bull. Soc. Z. Fr. 1892; *D. præferrata*, *bifasciata*, *insignis*, Peak Downs, Australia, DISTANT, p. 279, Tr. E. Soc. 1892 : n. spp.
- Eriphyle ? paradoxa*, E. Africa, GERSTÆCKER, p. 58, JB. Hamb. Anst. ix, n. sp.
- Eurybrachys apicata*, India, DISTANT, p. 281, Tr. E. Soc. 1892, n. sp.
- Flata radiata*, Borneo, *labeculata*, Celebes, p. 284, *F. (Colobesthes ?) semanga*, Malay Penins., p. 285, pl. xiii, fig. 6, DISTANT, Tr. E. Soc. 1892, n. spp.
- Kandiana*, n. g., near *Messena*, for *K. lewisi*, n. sp., Ceylon, pl. xiii, fig. 2, DISTANT, p. 280, Tr. E. Soc. 1892.
- Lozocephala castanea*, E. India, DISTANT, p. 281, Tr. E. Soc. 1892, n. sp.
- Messena radiata*, E. India, DISTANT, p. 280, pl. xiii, fig. 1, Tr. E. Soc. 1892, n. sp.
- Mycterodus orthocephalus*, ♂ described; FERRARI, p. 568, Ann. Mus. Genov. (2) xii.
- Œcleus decens*, oviposition in *Yucca*; TOWNSEND, Payche, vi, p. 353.

- Oliarus angusticeps*, Japan, HORVÁTH, p. 137, Term. füzetek. xv, n. sp.  
*Platybrachys signata*, p. 281, *insignis*, Australia, *ærata*, Australia and Samoa, p. 282, DISTANT, Tr. E. Soc. 1892, n. spp.  
*Phromnia parmata*, Philippines, p. 283, *montivaga*, Borneo, p. 284, pl. xiii, fig. 5, DISTANT, Tr. E. Soc. 1892, n. spp.  
*Bicania* (*Pochazia*) *flavocostata*, Borneo, DISTANT, p. 283, Tr. E. Soc. 1892, n. sp.  
*Scamandra diana*, Sangir, DISTANT, p. 276, pl. xiii, fig. 4, Tr. E. Soc. 1892, n. sp.

#### CERCOPIDÆ.

- Isthmia* (?) *elegantula*, E. Africa, GERSTAECKER, p. 57, JB. Hamb. Anst. ix, n. sp.  
*Phymatostetha deschampsii*, E. India, LETHIERRY, p. 208, Bull. Soc. Z. Fr. 1892, n. sp.

#### MEMBRACIDÆ.

- Synopsis of the N. American genera ; GODING, Tr. Am. Ent. Soc. xix, pp. 253-260.  
*Centrodonatus*, n. g., *Centrotinæ*, for *Gargara atlas*, Goding, n. sp., infra ; GODING, Ent. News, iii, p. 201.  
*Gargara atlas*, California, GODING, p. 110, Ent. News, iii, n. sp.  
*Heliria scalaris*, Colorado, GODING, p. 200, Ent. News, iii, n. sp.  
*Platycotis minax*, California, GODING, p. 109, Ent. News, iii, n. sp.  
*Potnia asodalis*, California, GODING, p. 110, Ent. News, iii, n. sp.  
*Pubilia bicinctura*, Colorado, GODING, p. 200, Ent. News, iii, n. sp.  
*Stictocephala gillettei*, Colorado, GODING, Ent. News, iii, pp. 108 & 200, n. sp.  
*Stictopelta nova*, California, p. 110, *marmorata*, New Mexico, p. 201, GODING, Ent. News, iii, n. spp.  
*Telamona rileyi*, California, GODING, p. 108, Ent. News, iii, n. sp.

#### JASSIDÆ.

- Tabulation of the N. American genera ; DUZEE, pp. 295-300, Tr. Am. Ent. Soc. xix.  
*Acinopterus*, n. g., near *Athysanus*, p. 307, for *A. acuminatus*, n. sp., N. America, p. 308, DUZEE, Psyche, vi.  
*Agallia sanguinolenta*, oviposition and larvæ noticed ; OSBORN, Canad. Ent. xxiv, p. 35.  
*Athysanus comma*, *bicolor*, p. 114, *obtus* (altered to *obtus*, p. 156), p. 115, N. America, DUZEE, Canad. Ent. xxiv, n. spp.  
*Chlorotettix*, n. g., near *Thamnotettix*, type *Bythoscopus unicolor*, Fitch, p. 306, with *C. viridius*, p. 309, *galbanatus*, p. 310, n. spp., N. America ; DUZEE, Psyche, vi.



- Deltocephalus ecchellii*, Tyrol, FERRARI, p. 574, Ann. Mus. Genov. (2) xii;  
*D. flavocostatus*, Mississippi, DUZEE, p. 116, Canad. Ent. xxiv;  
*D. simplex*, *osborni*, p. 304, *cinereus*, *signatifrons*, p. 305, *weedi*,  
 p. 306, N. America, DUZEE, Tr. Am. Ent. Soc. xix : n. spp.  
*Eupteryx zelleri*, n. var. *hipposideros*, HORVÁTH, p. 140, Rev. d'Ent. xi,  
 n. sp.  
*Eutettix*, n. g., type *Thamnotettix lurida*, Duzee; DUZEE, Psyche, vi,  
 p. 307.  
*E. pictus*, p. 301, *marmoratus*, p. 302, N. America, DUZEE, Tr. Am. Ent.  
 Soc. xix, n. spp.  
*Gnathodus impictus*, *abdominalis*, New Jersey, DUZEE, p. 113, Canad.  
 Ent. xxiv, n. spp.  
*Goniagnathus elongatus*, E. India, LETHIERRY, p. 209, Bull. Soc. Z. Fr.  
 1892, n. sp.  
*Henschia*, n. g., near *Aconura*, for *H. seticauda*, n. sp., Hungary; LETHI-  
 ERRY, Rev. d'Ent. xi, p. 69.  
*Macropsis indica*, Mahé, LETHIERRY, p. 209, Bull. Soc. Z. Fr. 1892, n. sp.  
*Phlepsius latifrons*, p. 66, *uhleri*, p. 67, *cinereus*, p. 68, *pallidus*, p. 69,  
*fuscipennis*, p. 70, *truncatus*, p. 72, *incisus*, p. 73, *punctiscriptus*, p. 75,  
*apertus*, *humidus*, p. 76, *nebulosus*, p. 77, *spatulatus*, p. 78, *ovatus*,  
 p. 79, *superbus*, p. 81, DUZEE, Tr. Am. Ent. Soc. xix, n. spp.  
*Tettigonia mitrata*, E. Africa, GERSTAECKER, p. 58, JB. Hamb. Anst. ix,  
 n. sp.  
*Thamnotettix ghilianii*, Turin, FERRARI, p. 573, Ann. Mus. Genov. (2)  
 xii; *T. brevispinus*, E. India, LETHIERRY, p. 209, Bull. Soc. Z. Fr.  
 1892; *T. inornata*, New York, DUZEE, p. 303, Tr. Am. Ent. Soc.  
 xix; *T. smithi*, *longiseta*, p. 266, *gillettii*, p. 267, *montanus*, p. 268,  
 N. America, DUZEE, Canad. Ent. xxiv : n. spp.  
*Ulopa canadensis*, Canada, DUZEE, p. 301, Tr. Am. Ent. Soc. xix, n. sp.

## PSYLLIDÆ.

- Bactericera maritima*, S. France, HORVÁTH, p. 140, Rev. d'Ent. xi, n. sp.  
*Diaphorina ægyptiaca*, Cairo, PUTON, p. 30, Rev. d'Ent. xi, n. sp.  
*Psylla pyricola*, habits and structure; SLINGERLAND (851).  
*Trioza alacris*, ravages on *Laurus nobilis*; THOMAS (926).

## APHIDIDÆ.

- Pemphigiens*: two forms of biological cycles in this group; HORVÁTH  
 (427).  
*Lachnus pini* and *pineti*, males described, *pini*, n. var. *cembrae*, p. 74;  
 CHOLODKOVSKY, Zool. Anz. xv, p. 67.  
*L. farinosus*, St. Petersburg, CHOLODKOVSKY, Zool. Anz. xv, p. 74, n. sp.  
*Phylloxera vastatrix*: abstract of life-history; TEICH, KB. Ver. Riga,  
 xxxiv, pp. 36-38: habits; BEHR, Zool. ii, pp. 305-310: sucking-  
 apparatus, &c.; KRASSILTSCHIK (519).

*Siphonophora cucurbitæ*, habits ; WEBSTER, p. 311, Canad. Ent. xxiv. *S. tilia*, mode of deposition of eggs ; HOWARD, p. 249, P. E. Soc. Wash. ii.

*Toxoptera graminum*, notes on ; WEBSTER, Ins. Life, iv, pp. 245-248.

## COCCIDÆ, ALEURODIDÆ.

[Cf. COCKERELL (178, 179), COQUILLETT (184), DOUGLAS (224, 625), MASKELL (590, 591, 592), MAYER (594), MORGAN (179, 625, 626), NEWSTEAD (637), TARGIONI-TOZZETTI (912, 913), TOWNSEND (949).]

Mode of preparing and mounting *Coccidæ* ; MASKELL, Tr. N. Z. Inst. xxiv, pp. 3-5.

General information about *Coccidæ* : their enemies, &c. ; COCKERELL (178).

For localities of a large number of species of *Coccidæ*, see MASKELL, Ent. M. M. xxviii, pp. 69-71.

*Coccidæ* of California ; COQUILLETT, Bull. Dep. Agric. Ent. xxvi, pp. 13-36.

Note on the "spinnerets" of *Diaspidinæ* ; MASKELL, Tr. N. Z. Inst. xxiv, pp. 5 & 6.

*Acanthococcidæ* and *Dactylopidæ*, generic and group distinctions discussed ; MASKELL, p. 30, pl. iv, figg. 11-17, Tr. N. Z. Inst. xxiv.

*Aleurodicus*, n. g. for *A. anonæ*, n. sp., Demerara, and *Aleurodes cocois*, Curt. ; DOUGLAS & MORGAN, Ent. M. M. xxviii, p. 32, pl. i.

*Aonidia blanchardi*, Sahara, on date-palm, TARGIONI, p. 69, Mém. Soc. Zool., and Bull. Ent. Ital. xxiv, pp. 170-188, with developmental history : n. sp.

*Aspidiotus aurantii*, synonymical note ; MASKELL, Tr. N. Z. Inst. xxiv, p. 12.

*A. subrubescens*, p. 9, pl. i, figg. 1 & 2, *fodiens*, figg. 3 & 4, *bossiæ*, figg. 5 & 6, p. 10, *rossi*, p. 11, figg. 7-9, Australia, MASKELL, Tr. N. Z. Inst. xxiv, n. spp.

*Brachyscelidæ* : notes on the group ; MASKELL, p. 53, Tr. N. Z. Inst. xxiv.

*Carteria melaleucæ*, p. 54, pl. xii, figg. 1-10, *acaciæ*, p. 56, figg. 11-15, Australia, MASKELL, Tr. N. Z. Inst. xxiv, n. spp.

*Ceroplastes* : spp. from Mexico and their parasites noticed ; TOWNSEND, Zoe, iii, pp. 255-257.

*Chionaspis* : note on species of ; MORGAN, Ent. M. M. xxviii, pp. 14-16.

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- Pulvinaria maskelli*, life history ; OLIFF, p. 176, pl. xi, Agric. Gaz. N.S.W.
- P. persicæ*, England, NEWSTEAD, p. 142, Ent. M. M. xxviii, n. sp.
- Rhizococcus grandis*, Australia, MASKELL, p. 29, pl. vi, figg. 1 & 2, Tr. N. Z. Inst. xxiv, n. sp.
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- Uhleria florinæ*, synonymy and habitats ; MORGAN, Ent. M. M. xxviii, p. 12.

## (F.) NEUROPTERA.

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*Heteroplectron* : systematic position queried ; BANKS, p. 373, Tr. Am. Ent. Soc. xix.

*Hydroptila maclachlani*, ♂ characters ; MORTON, Ent. M. M. xxviii, p. 108.

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*Chrysopa ramburi*, habits and localities ; MACLACHLAN, Ent. M. M. xxviii, p. 50.

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### THYSANURA and COLLEMBOLA (APTERA).

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*Sminthurus viridis*, n. var. *tripunctatus*, REUTER, p. 227, Cefv. Finska Förh. xxxiii, p. 227.  
*S. sex-maculatus*, Maine, HARVEY, p. 169, Ent. News, iii, n. sp.  
*Templetonia americana*, Maine, HARVEY, Ent. News, iii, p. 57, n. sp.  
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MALLOPHAGA, TERMITIDÆ, PSOCIDÆ.

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- Hexagenia mexicana*, ♂ imago figured and described; EATON, p. 5, pl. i, fig. 4, Biol. Centr. Am. Neuropt.
- Homoneuria salvinia*, figured, pl. i, fig. 2; EATON, Biol. Centr. Am. Neuropt.
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- Leptohyphes brevissimus*, Guatemala, EATON, p. 12, pl. i, fig. 9, Biol. Centr. Am. Neuropt., n. sp.
- Palingenia robusta*, p. 407, *minor*, p. 408, E. India, EATON, J. A. S. B. lx, n. spp.
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## ODONATA.

- [Cf. CALVERT (150), CHATIN (165, 166), KARSCH (466, 467, 468), MARTIN (585), SELYS (824, 825).]
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- Nature of respiration of larva of *Æschna*; MARTIN, Bull. Soc. Philom. (8) iv, p. 122.
- Epipharynx* and *Hypopharynx* in Odonata; SMITH, p. 326, P. Am. Ass. xl.
- Aciagrion*, n. subg. for part of *Pseudagrion*, p. 509, with *A. pallidum*, n. sp., Burma. p. 512; SELYS, Ann. Mus. Genov. (2) x.
- Æschna rileyi*, Kilimanjaro, CALVERT, p. 164, Tr. Am. Ent. Soc. xix, n. sp.
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- Orogomphus speciosus*, Burma, SELYS, p. 481, Ann. Mus. Genov. (2) x, n. sp.
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*R. aterrima*, Borneo, SELYS, p. 445, Ann. Mus. Genov. (2) 1, n. sp.

*Thore concinna*, MacLachlan, = (*Sapho pulchella*, Kirb.); MACLACHLAN, p. 456, Berl. Ent. Zeit. xxxvi.

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*Urothemis brevipennis*, ♂ described; SELYS, p. 469, Ann. Mus. Genov. (2) 1.

(G.) ORTHOPTERA.

[Cf. ADELUNG (3), BATESON & BRINDLEY (42), BLATCHLEY (104, 105), BLATHWAYT (107), BOLIVAR (110, 710), BRONGNIART (132, 134), BRUNER (135), BRUNER, COQUILLETT, & OSBORN (136), BRUNNER (137), BRUNNER & REDTENBACHER (138), CHOLODKOVSKY (173), DISTANT (210), DOHRN (222), EBERLI (244), FINOT (282), GRIFFINI (361), HEYMONS (404), KARSCH (469-472), KRAUSS (520, 521), KÜNCKEL (529-532), LATASTE (540), PICTET & SAUSSURE (692), RATH (713), REDTENBACHER (717), SAUSSURE (210, 794, 795), SCUDDER (812, 816), SELYS (826), TEPPER (916, 917), WERNER (1002).] Notes on the *Orthoptera* of Ceylon ; BRUNNER, pp. 337-339, Ent. Nachr. xviii.

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*Dermaptera* or *Dermoptera*, orthography discussed ; KRAUSS & MIK, pp. 164-169, Wien. ent. Z. xi.

*Forficula auricularia*, oviposition, reluctance for flight ; BLATHWAYT, Int. J. Micr. (3) ii, pp. 7-16, pls. i & ii : variation in ♂ forceps ; BATESON & BRINDLEY, P. Z. S. 1892, p. 586.

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*Anaptlycha*, n. g., *Ectobiidæ*, for *A. bipunctulata*, n. sp., St. Vincent, pl. xv, fig. 1 ; BRUNNER, P. Z. S. 1892, p. 202.

*Deropeltis bueana*, Cameroons, KARSCH, p. 65, Berl. Ent. Zeit. xxxvii, n. sp.

*Epilampra brevis*, St. Vincent, BRUNNER, p. 203, pl. xv, fig. 3, P. Z. S. 1892, n. sp.

*Holocampea simonyi*, Tenerife, KRAUSS, p. 165, Zool. Anz. xv, n. sp.

*Homalopteryx laminata*, St. Vincent, BRUNNER, p. 204, pl. xv, fig. 4, P. Z. S. 1892, n. sp.

*Loboptera fortunata*, Canaries, KRAUSS, p. 165, Zool. Anz. xv, n. sp.

*Nocticola*, n. g., p. 29, for *N. simoni*, *cæca*, n. spp., found in caves in the Philippines, pp. 32 & 33, pl. i ; BOLIVAR, Ann. Soc. Ent. Fr. lxi.

- Parasphæria nigra*, St. Vincent, BRUNNER, p. 206, pl. xv, fig. 7, P. Z. S. 1892, n. sp.
- Periplaneta truncata*, Canaries, &c., &c., KRAUSS, p. 165, Zool. Anz. xv, n. sp.
- Phyllodromia germanica*, embryology; CHOLODKOVSKY (173).
- Pseudophyllodromia semivitreus*, St. Vincent, BRUNNER, p. 203, pl. xv, fig. 2, P. Z. S. 1892, n. sp.
- Rhyparobia*, n. g. for *Panchloria maderæ*; KRAUSS, p. 165, Zool. Anz. xv.
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- Amorphoscelis annulipes*, Cameroons, KARSCH, p. 145, Ent. Nachr. xviii, n. sp.
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- Hierodula bioculata*, egg-case figured; KRAUSS, p. 146, Wien. ent. Z. xi.
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- Leptocola tenuissima*, Cameroons, KARSCH, p. 146, Ent. Nachr. xviii; *L. seriepunctata*, p. 10, *linea*, p. 12, W. Africa, KARSCH, t. c. : n. spp.
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- Melliera*, n. g. for *M. atopogamia*, n. sp., Mexico; SAUSSURE, p. 123, Soc. Ent. vii.
- Miomantis armicollis*, Cameroons, KARSCH, p. 66, Berl. Ent. Zeit. xxvii, and Ent. Nachr. xviii, p. 148; *M. preussi*, p. 148, *gracilis*, p. 149, Cameroons, KARSCH, t. c. : n. spp.
- Mionyx*, n. g., *Thespiens*; SAUSSURE, p. 122, Soc. Ent. vii.
- Parastagmatoptera lobipes*, St. Vincent, REDTENBACHER, p. 206, pl. xv, fig. 8, P. Z. S. 1892, n. sp.
- Phitrus*, n. g., near *Danuria*, for *P. lobulipes*, n. sp., Cameroons; KARSCH, p. 149, Ent. Nachr. xviii.
- Phyllomantis*, n. g., p. 124, for *P. laurifolia*, Panama, not described; SAUSSURE, p. 124, Soc. Ent. vii.
- Polypilota laticollis*, *flavipennis*, *truncatipennis*, Cameroons, KARSCH, Ent. Nachr. xviii, p. 147, n. spp.
- Rhombodera scutata*, W. Africa, KARSCH, p. 6, Ent. Nachr. xviii, n. sp.
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## PHASMATIDÆ.

- Leptynia kaznigi*, Tunisia, KRAUSS, p. 147, Wien. ent. Z. xi, n. sp.  
*Palophus*: monograph of; BRONGNIART, N. Arch. Mus. Paris (3) iii, pp. 193-204, pls. viii & ix.  
*Phanocles curvipes*, St. Vincent, REDTENBACHER, p. 207, pl. xv, fig. 9, P. Z. S. 1892, n. sp.

## GRYLLIDÆ.

- Apithes mcneilli*, Indiana, BLATCHLEY, p. 27, Canad. Ent. xxiv, n. sp.  
*Ectatoderus antillarum*, St. Vincent, REDTENBACHER, p. 218, pl. xvii, fig. 16, P. Z. S. 1892, n. sp.  
*Endacustes dispar*, St. Vincent, REDTENBACHER, p. 219, pl. xvii, fig. 18, P. Z. S. 1892, n. sp.  
*Gryllodes rufipes*, St. Vincent, REDTENBACHER, p. 217, pl. xvii, fig. 15, P. Z. S. 1892, n. sp.  
*Gryllotalpa vulgaris*, anatomy and histology of alimentary canal; EBERLI (244): phosphorescent; LUDWIG, CB. Bakt. Parasit. ix, p. 561.  
*G. borealis*, notes on; FLETCHER, Canad. Ent. xxiv, p. 23, and DORAN, t. c. p. 147, life-history, *id.*, t. c., p. 270.  
*Gryllus guanchicus*, Tenerife, KRAUSS, p. 171, Zool. Anz. xv, n. sp.  
*Larandus marmoratus*, St. Vincent, REDTENBACHER, p. 218, pl. xvii, fig. 18, P. Z. S. 1892, n. sp.  
*Œcanthus niveus* and allies distinguished; HART, Ent. News. iii, pp. 33 & 34.  
*Phæophyllacris phalangium*, Cameroons, KARSCH, p. 78, Berl. Ent. Zeit. xxxvii, n. sp.

## LOCUSTIDÆ.

- Minute anatomy of tibial ears of *Locustidæ*; ADELUNG (3).  
 Monographic revision of *Mecopodides*; REDTENBACHER, pp. 183-224, pl. iii, Verh. z.-b. Wien, xlii.  
 Synopsis of generic characters of *Pseudophyllides*; PICTET & SAUSSURE, Icon. Sant. vertes.  
*Acanthoprion*, n. g., *Pseudophyllides*, p. 12, for *A. aztecum*, n. sp., Mexico, p. 26, pl. iii, fig. 21; PICTET & SAUSSURE, Icon. Sant. vertes.  
*Acilacris*: systematic position; KARSCH, p. 327, Berl. Ent. Zeit. xxxvi.  
*Alectoris superba*, Brun., = (*Hectoria pontoni*, Tep.); TEPPER, p. 87, Tr. R. Soc. S. Austr. xv.  
*Ametrosomus*, n. g. near *Ametrus*, p. 169, for *A. helmsi*, n. sp., Centr. Australia, p. 170; TEPPER, Tr. R. Soc. S. Austr. xv.  
*Amytta mutilata*, ♂ described; KARSCH, p. 328, Berl. Ent. Zeit. xxxvi.  
*Anepitacta*, systematic position; KARSCH, p. 327, Berl. Ent. Zeit. xxxvi.  
*Anoedopoda*, n. g., *Mecopodides*, p. 333, for *A. erosa*, n. sp., Cameroons, p. 334, KARSCH, Berl. Ent. Zeit. xxxvi; ♂ figured, *op. cit.* xxxvii, p. 77.

- Anonconotus*, Cam., = (*Analota*, Brun.); GRIFFINI, p. 2, Boll. Mus. Zool. Tor. vii, No. 125.
- Aprion oculatum*, Ceylon, *maculifolia*, Sumatra, pl. iii, fig. 19, PICTET & SAUSSURE, p. 21, Icon. Saut. vertes, n. spp.
- Apteronomus*, n. g. near *Apotrechus*, for *A. bordaensis*, n. sp., Kangaroo I.; TEPPER, p. 168, Tr. R. Soc. S. Austr. xv.
- Apteroscirtus*, n. g., *Mecopodides*, for *A. denudatus*, n. sp., Cameroons; KARSCH, p. 330, Berl. Ent. Zeit. xxxvi.
- Ariagona*, n. g., *Decticinae*, for *A. margaritæ*, n. sp., Tenerife; KRAUSS, p. 170, Zool. Anz. xv.
- Arota rosaura*, noticed and figured; KARSCH, p. 316, Berl. Ent. Zeit. xxxvi.
- Bliastes superbus*, p. 211, pl. xvi, fig. 12, *striolatus*, p. 212, fig. 13, St. Vincent, REDTENBACHER, P. Z. S. 1892, n. spp.
- Brochopeplus*, n. g., *Pseudophyllides*, p. 12, for *B. reticulatus*, n. sp., hab. ?, p. 25, pl. iii, fig. 20, PICTET & SAUSSURE, Icon. Saut. vertes.
- Cædicia longipennioides*, p. 89, *halmaturina*, p. 91, *hirsuta*, p. 93, *roseopennis*, p. 94, Australia, TEPPER, Tr. R. Soc. S. Austr. xv, n. spp.
- Calliphona*, n. g. near *Locusta*, p. 169, for *C. königi*, n. sp., Tenerife, p. 170; KRAUSS, Zool. Anz. xv.
- Characta*, n. g., *Mecopodides*, for *C. bituberculata*, n. sp., Borneo, pl. iii, fig. 9; REDTENBACHER, p. 207, Verh. z.-b. Wien, xlii.
- Chloracris*, n. g., p. 10, for *C. prasina*, India, pl. iii, fig. 14, *brullei*, Java, n. spp., p. 22; PICTET & SAUSSURE, Icon. Saut. vertes.
- Chlorotribonia*, n. g., *Pseudophyllides*, p. 7, for *C. acutipennis*, n. sp., Java, p. 16, pl. ii, fig. 9; PICTET & SAUSSURE, Icon. Saut. vertes.
- Clonia wohlbergi*, habits; DISTANT, p. 83, Naturalist Transvaal.
- Condylodera tricondyloides*, Westw., = (*Trochalodera violascens*, Brunner); DOHRN, p. 64, S. E. Z. liii.
- Corycus intermedius*, W. Africa, REDTENBACHER, p. 221, pl. iii, fig. 12 Verh. z.-b. Wien, xlii, n. sp.
- Cyrtaspis scutata* and *variopicta*, characters and synonymy; BOLIVAR, Rev. d'Ent. xi, pp. 289-293.
- Cyrtophyllus crepitans*, St. Vincent, REDTENBACHER, p. 213, pl. xvii, fig. 14, P. Z. S. 1892, n. sp.
- Dasyphleps*, n. g. for *Locusta novæ-guinææ*; KARSCH, p. 343, Berl. Ent. Zeit. xxxvi.
- Diaphlebus*, n. g. for *D. brevimarginatus*, n. sp., Fiji Is.; KARSCH, p. 343, Berl. Ent. Zeit. xxxvi.
- D. breittatus*, p. 193, *marmoratus*, p. 194, pl. iii, fig. 2, REDTENBACHER, Verh. z.-b. Wien, xlii, n. spp.
- Dicranopsyra*, n. g., *Phanopterides*, for *D. multicolor*, n. sp., Borneo; DOHRN, S. E. Z. liii, p. 71.
- Dictyota indivisa*, Adelaide, p. 98, *elderi*, W. Australia, p. 99, TEPPER, Tr. R. Soc. S. Austr. xv, n. spp.
- Elæoptera*, n. g., *Mecopodides*, p. 195, for *E. nitida*, *lineata*, pl. iii, fig. 3, n. spp., Fiji Is., p. 196; REDTENBACHER, Verh. z.-b. Wien, xlii.

- Encentra*, n. g., *Mecopodides*, for *E. longipes*, n. sp., Medellin, pl. iii, fig. 7, REDTENBACHER, p. 204, Verh. z.-b. Wien, xlii.
- Eonius*, n. g. near *Neanius*, for *E. tigrinus*, p. 163, *atrifrons*, p. 164, *fumatus*, p. 165, n. spp., S. Australia; TEPPER, Tr. R. Soc. S. Austr. xv.
- Ephippithya quadrigesimaguttata*, S. Australia, TEPPER, p. 84, Tr. R. Soc. S. Austr. xv, n. sp.
- Ephippithytoidea*, n. g., *Phaneropterides*, for *E. sparsa*, n. sp., S. Australia; TEPPER, p. 85, Tr. R. Soc. S. Austr. xv.
- Eucorypha mutica*, Cameroons, KARSCH, p. 327, Berl. Ent. Zeit. xxxvi; *E. adicra*, Cameroons, KARSCH, p. 75, op. cit. xxxvii, n. spp.
- Eumegalodon*, n. n. for *Megalodon*, Brullé nec Sowerby, p. 277; the species described and figured, pp. 279-285, pl. xii; a new tribe, *Eumegalonidæ*, proposed, p. 285; BRONGNIART, N. Arch. Mus. Paris (3) iii.
- Goëtia*, n. g. (*Psyres*) for *G. galbana*, n. sp., Cameroons; KARSCH, pp. 322 & 323, Berl. Ent. Zeit. xxxvi.
- Gravenreuthia*, n. g., *Phaneropterides*, p. 73, for *G. saturata*, n. sp., Cameroons, p. 74; KARSCH, Berl. Ent. Zeit. xxxvii.
- Gryllacridæ* of Australia; TEPPER, pp. 139-170, Tr. R. Soc. S. Austr. xv.
- Gryllacris eximia*, p. 339, *genufusca*, p. 340, *nigriceps*, p. 341, Cameroons, KARSCH, Berl. Ent. Zeit. xxxvi; *G. atrogeniculata*, Centr. Australia, p. 144, *marmoriceps*, p. 145, *longicornis*, p. 146, *ferrotestacea*, p. 147, S. Australia, *lutescens*, Centr. Australia, p. 148, *subdebilis*, p. 151, *incerta*, p. 154, *paulula*, *molineusiana*, p. 155, S. Australia, TEPPER, Tr. R. Soc. S. Austr. xv : n. spp.
- Hemisaga*, note on the genus, with corrections of errors; SAUSSURE, pp. 12-14, Ann. Soc. Ent. Fr. lxi.
- H. prædatoria*, pp. 63 & 258, Transvaal, DISTANT, Naturalist Transvaal, n. sp.
- Ityocephala*, n. g., *Mecopodides*, p. 219, for *I. falcata*, n. sp., Fiji Is., pl. iii, fig. 11, p. 220; REDTENBACHER, Verh. z.-b. Wien, xlii.
- Leproscurtus*, n. g., *Mecopodides*, p. 328, for *Mecopoda granulosa*, Karsch; KARSCH, Berl. Ent. Zeit. xxxvi.
- Leptodera ornatipennis*, characters of; DOHRN, p. 66, S. E. Z. liii.
- Macroscirtus brevipennis*, Sierra Leone, REDTENBACHER, p. 218, Verh. z.-b. Wien, xlii, n. sp.
- Mataeus casamancæ*, Guinea, PICTET & SAUSSURE, p. 23, pl. iii, fig. 13, Icon. Sant. vertes, n. sp.
- Mecopodides*: tabulation of certain genera of; KARSCH, Berl. Ent. Zeit. xxxvi, pp. 341-346.
- Mecopoda dilatata*, Borneo, p. 213, *divergens*, hab. ?, REDTENBACHER, p. 213, Verh. z.-b. Wien, xlii, n. spp.
- Microprion*, n. g., *Pseudophyllides*, p. 17, for *M. philippinensis*, Philippines, *elliptifolia*, Java, pl. ii, fig. 11, p. 18; PICTET & SAUSSURE, Icon. Sant. vertes.

- Microsaga*, Sauss., referred to *Conocephaliens*; SAUSSURE, p. 15, Ann. Soc. Ent. Fr. lxi.
- Mioacris*, n. g., *Pseudophyllides*, p. 7, for *M. javana*, n. sp., Java, p. 16 : PICTET & SAUSSURE, Icon. Saut. vertes.
- Miosaga*, n. g., *Sagiens*, p. 10, for *M. orthozipha*, n. sp., New Holland, p. 11 ; SAUSSURE, Ann. Soc. Ent. Fr. lxi.
- Mirollia carinata*, ♂ characters ; DOHRN, p. 66, S. E. Z. liii.
- Onomarcus latipennis*, p. 15, *mandarinus*, p. 16, China, PICTET & SAUSSURE, Icon. Saut. vertes, pl. i, figg. 6 & 7, n. spp.
- Orchelimum gracilis* is not *Xiphidium fasciatum* ; BRUNER, p. 264, Ent. News, iii.
- Orophila*, n. g. (isolated), p. 168, for *O. nubigena*, n. sp., Tenerife, p. 169 ; KRAUSS, Zool. Anz. xv.
- Pachypodagrus*, n. g., *Stenopelmatidæ*, p. 176, for *P. magareyi*, *crassipes*, n. spp., S. Australia, p. 177 ; TEPPER, Tr. R. Soc. S. Austr. xv.
- Paragryllacris pallidolinea*, p. 159, *insignis*, p. 161, *deserta*, p. 162, S. Australia, TEPPER, Tr. R. Soc. S. Austr. xv, n. spp.
- Penthoplophora*, n. g., *Stenopelmatidæ*, p. 175, for *S. driffieldi*, n. sp., Australia ; TEPPER, p. 176, Tr. R. Soc. S. Austr. xv.
- Phaneropteridæ* of Australia ; TEPPER, pp. 77-113, Tr. R. Soc. S. Austr. xv.
- Phaula trichopus*, Deh., = (*chlorotica*, Brunner) ; DOHRN, p. 69, S. E. Z. liii.
- Phlaurocentrum mecopodoides*, Cameroons, KARSCH, p. 321, Berl. Ent. Zeit. xxxvi, n. sp.
- Phricta*, n. g., p. 191 (*Mecopodides*), for *P. spinosa*, n. sp., Queensland, p. 192, pl. iii, fig. 1 ; REDTENBACHER, Verh. z.-b. Wien, xlii.
- Phyllomimus truncatifolia*, Moluccas, PICTET & SAUSSURE, p. 19, pl. ii, fig. 10, Icon. Saut. vertes, n. sp.
- Phyllotribonia*, n. g., *Pseudophyllides*, p. 10, for *P. verruculosa*, n. sp., Centr. Africa, p. 23, pl. iii, fig. 17 ; PICTET & SAUSSURE, Icon. Saut. vertes.
- Phyllozelus*, n. g. for *P. genicularis*, n. sp., hab. ?, pl. iii, fig. 16, PICTET & SAUSSURE, p. 24, Icon. Saut. vertes.
- Plungiopsis foraminata*, Cameroons, KARSCH, p. 324, Berl. Ent. Zeit. xxxvi, n. sp.
- Platycleis azami*, S. France, FINOT, Bull. Soc. Ent. Fr. lxi, p. xxxv, n. sp.
- Pæcilopsyra*, n. g. for *Phaneroptera octoseriata*, Deh. ; DOHRN, p. 69, S. E. Z. liii.
- Polichne ferruginea*, S. Australia, TEPPER, p. 100, Tr. R. Soc. S. Austr. xv, n. sp.
- Preussia lobatipes*, ♂ described ; KARSCH, p. 326, Berl. Ent. Zeit. xxxvi.
- Pyrgophylax emarginatus*, Borneo, DOHRN, p. 68, S. E. Z. liii, n. sp.
- Rhammatopoda*, n. g., *Mecopodides*, for *R. opilionoides*, n. sp., Peru, pl. iii, fig. 6 ; REDTENBACHER, p. 203, Verh. z.-b. Wien, xlii.
- Sagiens* : synopsis of genera ; SAUSSURE, pp. 5-16, Ann. Soc. Ent. Fr. lxi.

- Scutotribonia*, n. g., *Pseudophyllides*, p. 11, for *S. humbertiana*, n. sp., Ceylon, pl. iii, fig. 18, p. 24 ; PICTET & SAUSSURE, Icon. Saut. vertes.
- Segestes punctipes*, *fuscus*, Philippines, *unicolor*, Pelew Is., p. 199, *decoratus*, New Guinea, p. 200, pl. iii, fig. 4, REDTENBACHER, Verh. z.-b. Wien. xlii, n. spp.
- Stenopelmaticæ*, synopsis of Australian and Polynesian ; TEPPER, pp 170-178, Tr. R. Soc. S. Austr. xv.
- Sthenaropoda*, n. g., *Mecopodides*, p. 331, for *S. preussiana*, n. sp., Cameroons, p. 332 ; KARSCH, Berl. Ent. Zeit. xxxvi.
- Sympæstria longipes*, Java, DOHRN, S. E. Z. liii, p. 73, n. sp.
- Tæniomena sororoides*, p. 106, S. Australia, *fraserensis*, W. Australia, p. 108, *minor*, S. Australia, p. 109, TEPPER, Tr. R. Soc. S. Austr. xv, n. spp.
- Terjandrus horridus*, redescription and synonymy ; SAUSSURE, Ann. Soc. Ent. Fr. lxi, pp. 7 & 8.
- Trachyzulpha*, n. g. near *Zulpha*, p. 67, for *T. fruhstorferi*, n. sp., Java, p. 68 ; DOHRN, S. E. Z. liii.
- Tympanoptera*, n. g., p. 19, for *T. grioleti*, Moluccas, pl. iii, fig. 15, *oceanica*, Fiji Is., pl. ii, fig. 12, p. 20 ; PICTET & SAUSSURE, Icon. Saut. vertes.
- Xiphidium scudderi*, Indiana, BLATCHLEY, Canad. Ent. xxiv, p. 26, n. sp.

## ACRIDIIDÆ.

- Acridiid* ovipositing in *Rubus* stems ; VERHOEFF, p. 298, Ent. Nach. xviii.
- Arminda*, n. g. near *Platyphyma*, for *A. brunneri*, n. sp., Tenerife ; KRAUSS, p. 168, Zool. Anz. xv.
- Caletes*, n. g., p. 209, for *C. apterus*, n. sp., St. Vincent, p. 210, pl. xvi, fig. 11 ; REDTENBACHER, P. Z. S. 1892.
- Caloptenus vulcanius*, Canary Is., KRAUSS, p. 167, Zool. Anz. xv, n. sp.
- Chrotogonus meridionalis*, Transvaal, SAUSSURE, p. 262, pl. iv, fig. 5, in Distant, Naturalist Transvaal, n. sp.
- Eremobia clareli*, n. var., *læviuscula* ; KRAUSS, p. 149, Wien. ent. Z. xi.
- Gemeneta*, n. g., *Acridiides*, p. 71, for *G. terreæ*, n. sp., Cameroons, p. 72 ; KARSCH, Berl. Ent. Zeit. xxxvii.
- Hippiscus pantherinus*, p. 285, *haldemanni*, p. 286, *compactus*, p. 288, *variegatus*, *suturalis*, p. 301, *H. (Stictippus) californicus*, p. 317, *mar-moratus*, p. 318, *H. (xanthippus) conspicuus*, p. 319, *eremitus*, p. 320, *maculatus*, p. 333, *tigrinus*, p. 334, *affrictus*, p. 336, *altivolus*, p. 347, *cupidus*, p. 348, *pumilus*, p. 349, *albulus*, p. 350, *latefasciatus*, *obscurus*, p. 359, *griseus*, *aurilegulus*, p. 362, *stigmatosus*, p. 363, N. America, SCUDDER, Psyche, vi, n. spp.
- Melanoplus griseus*, ♂ described ; BLATCHLEY, p. 30, Canad. Ent. xxiv.
- Leptyama marginicollis*, habits ; BLATCHLEY, p. 28, Canad. Ent. xxiv.
- Celipoda canariensis*, Tenerife, KRAUSS, p. 167, Zool. Anz. xv, n. sp.
- Pamphagus foreli*, ♀ described ; KRAUSS, p. 149, Wien. ent. Z. xi.



*Petusia spumans*, var. *ater*; DISTANT, p. 259, pl. iv, fig. 3, Naturalist Transvaal.

*Pezotettix hoosieri*, Indiana; BLATCHLEY, p. 31, Canad. Ent. xxiv, n. sp.

*Pygostolus inuncatus*, Cameroona, KARSCH, p. 72, Berl. Ent. Zeit. xxxvii, n. sp.

*Schistocerca peregrina*: Criquet pelerin, Sauterelle de la Bible: oviposition, KÜNCKEL, C.R. Ass. Fr. Sci. xx, pt. 1, p. 241, and pt. 2, p. 554; correction as to egg-cases, LUCAS, p. lxxxi, Bull. Soc. Ent. Fr. lxi; note on the changes of colour that accompany its moults, KÜNCKEL, p. xxv, Bull. Soc. Ent. Fr. lxi, and BRONGNIART, *t. c.* p. lix; *S. americana*, the migratory locust of Chili, BOLIVAR, Act. Soc. Chili. ii, pp. 196-199: but it is not this species, LATASTE, *t. c.* pp. 200-209.

*Stauronotus maroccanus*, structure of Ootheca; TARRAL, Bull. Soc. Béziers, xii, p. 10.

*Stenobothrus simonyi*, Canary Is., KRAUSS, p. 166, Zool. Anz. xv, n. sp.

*Stictippus*, n. subg. of *Hippiscus*, SCUDDER, Psyche, vi, p. 317.

*Tettix quadriundulatus*, St. Vincent, REDTENRACHER, p. 208, pl. xvi, fig. 10, P. Z. S. 1892, n. sp.

*Thalpomena picteti*, Tenerife, KRAUSS, p. 167, Zool. Anz. xv, n. sp.

*Xiphocera distantii*, pl. iv, fig. 1, *picta*, fig. 2, SAUSSURE, p. 261, in Distant, Naturalist Transvaal, n. spp.

## XIV. ECHINODERMATA.\*

BY

F. A. BATHER.

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### I.—TITLES.

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1. BATHER, F. A. Suggested Terms in Crinoid Morphology. Ann. N. H. (6) ix, pp. 51-66. [*Crin.*]
2. —. British Fossil Crinoids. VI. *Botryocrinus quinquelobus*, n. sp., Wenlock Limestone; and note on *B. pinnulatus*. T. c. pp. 189-194, pl. xi. [*Crin.*]
3. —. British Fossil Crinoids. VII. *Mastigocrinus loreus*, n. g. & sp., Wenlock Limestone, Dudley. T. c. pp. 194-202, pls. xi & xii. [*Crin.*]
4. —. British Fossil Crinoids. VIII. *Cyathocrinus*: *C. acinotubus*, Ang., and *C. vallatus*, n. sp., Wenlock Limestone. T. c. pp. 202-226, pl. xiii. [*Crin.*]
5. —. The Fossil *Crinoidea* in the British Museum. (An attempt to put into practice modern ideas of Museum arrangement.) Ann. Rep. Museums' Assoc. for 1891, pp. 78-110. [*Crin.*]
- [See also BLAKE (13), NOETLING (38), WOODS (55).]

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\* While Mr. Bather's Record was still incomplete he was compelled to take a voyage, of some months duration, for the benefit of his sight. He has not returned in time to finish his work, the completion of which must therefore be given in the next volume of our RECORD, in combination with the literature of 1893.—  
EDITOR Z. R.

6. BEACHLER, C. S. Rocks of the Niagara age in Indiana. *Am. Geol.* ix, pp. 408 & 409. [*Crin.*]
7. —. Keokuk Group of the Mississippi Valley. *Op. cit.* x, pp. 88-96. [*Crin.*]
8. BELL, F. J. On the Echinoderms collected by the Ss. "Fingal" in 1890, and by the Ss. "Harlequin" in 1891, off the West Coast of Ireland. *Sci. P. R. Dubl. Soc. (n.s.)* vii, pp. 520-529, pls. xxiii-xxv. [*Hol., Crin., Ast., Oph., Ech.*]
9. —. A contribution to the classification of *Ophiuroids*, with descriptions of some new and little-known forms. *P. Z. S.* 1892, pp. 175-183, pls. xi & xii. [*Oph.*]
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11. BIGOT, A. [Remarks on *Cidaris cenomanensis*, Cott.] *Bull. Soc. L. Norm.* (4) v, pp. 54 & 55. [*Ech.*]
12. BIZET, P. Considérations Géologiques and Paléontologiques sur les terrains des Environs de Bellême et de Mamers. *Bull. Soc. Géol. Norm.* xiii, pp. 95-132 (Havre, 1890). [*Ech.*]  
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13. BLAKE, J. F. *Annals of British Geology*, 1891, pp. 224-231. [Gives abstracts of the following papers in Record for 1891: GREGORY (3) and (8), ROBERTS, SLADEN (2), CARPENTER (1), BATHER (1) and (2).]
14. BOEHM, G. Ueber eine Anomalie im Kelche von *Millericrinus mespiliformis*. *Z. geol. Ges.* xliii, pp. 741-743. [*Crin.*]  
CARPENTER, P. H. [See under BLAKE, J. F. (13).]
15. COLE, A. H. *Palaeaster eucharis*, Hall. *Bull. Geol. Soc. Am.* iii, pp. 512-514, pl. xv. [*Ast.*]
16. CUNNINGHAM, J. T. The Preservation of Marine Animals for Zoological purposes. *Ess. Nat.* vi, p. 124.
17. DARTON, N. H. Fossils in the "Archæan" rocks of Central Piedmont, Virginia. *Am. J. Sci.* xliv, pp. 50-52. [*Crin.*]
18. DYCHE, D. T. D. [Termination of the column of certain Crinoids.] *Am. Geol.* x, p. 130. [*Crin.*]
19. ECK, H. Abnormer Kelchbau bei *Encrinus gracilis*. *Z. geol. Ges.* xliv, pp. 138 & 139. [*Crin.*]
20. ETHERIDGE, R. (FIL.). A Monograph of the Carboniferous and Permo-Carboniferous Invertebrata of New South Wales. Part II. *Echinodermata, Annelida, and Crustacea*. *Mem. Geol. Surv. N.S.W.* Palæont. No. 5, pp. i-x, & 65-133, pls. xii-xxii. [*Ech., Ast., Crin., Blast.*]

- FABER, C. [See MILLER & FABER (34).]
21. FIELD, G. W. The Larva of *Asterias vulgaris*. Q. J. Micr. Sci. (n.s.) xxxiv, pp. 105-128, pls. xiii-xv. [*Ast.* and General.]
22. GREGORY, J. W. The Relations of the American and European Echinoid Faunas. Bull. Geol. Soc. Am. iii, pp. 101-108. [*Ech.*]
23. —. *Archaeopneustes abruptus*, a new genus and species of Echinoid from the Oceanic Series in Barbados. Q. J. Geol. Soc. xlviii, pp. 163-169. [*Ech.*]
24. —. Further additions to Australian Fossil *Echinoidea*. Geol. Mag. (n.s.), (iii), ix, pp. 433-437, pl. xii. [*Ech.*]
- [See also BLAKE, J. F. (13), & WOODS (55).]
- GUETTARD, J. E. [See LETACQ (29).]
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25. HARTLAUB, C. Ueber die Arten und den Skelettbau von *Culcita*. Notes Leyd. Mus. xiv, pp. 65-118, pls. i & ii. [*Ast.*]
26. JUKES-BROWNE, A. J., & HARRISON, J. B. The Geology of Barbados. Part II. The Oceanic Deposits. Q. J. Geol. Soc. xlviii, pp. 170-226. [*Ech.*]
27. KEYES, C. B. The Principal Mississippian Section. Bull. Geol. Soc. Am. iii, pp. 283-300, pl. ix. [*Crin.*]
- KOKEN, E. [See WÜHRMANN & KOKEN (54).]
28. LENT, C. Die Fauna der Benggerithone von Kandern. MT. badischen Geol. Landesanst. ii, Heft 3, pp. 623-639. [*Crin.*, *Ast.*]
29. LETACQ, A. L. Notice sur les Travaux Scientifiques de Guettard aux environs d'Alençon et de Laigle (Orne). Bull. Soc. L. Norm. (4) v, pp. 67-85. [*Crin.*]
- On p. 75 is a note "Sur les Encrines et les Pierres étoilées recueillies à Alençon," described by J. E. Guettard.
30. LOVEN, S. Echinologica. Bih. Sv. Ak. Handl. xviii (4), No. 1, pp. 1-74, pls. i-xii. [*Ech.*]
31. LUDWIG, H. Ueber die Rädchen der *Synaptiden*. Z. wiss. Zool. liv, pp. 350-364. [*Hol.*]
32. LUDWIG, H., & BARTHELS, P. Beiträge zur Anatomie des Holothurien. T. c. pp. 631-654, pl. xxviii. [*Hol.*]
33. MACBRIDE, E. W. The Development of the Genital Organs, Ovoid Gland, Axial and Aboral Sinuses in *Amphiura squamata*; together with some remarks on Ludwig's Hæmal System in this Ophiurid. Q. J. Micr. Sci. (n.s.) xxxiv, pp. 129-153, pls. xvi-xviii. [*Oph.*]

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35. MILLS, J. E. Stratigraphy and Succession of the Rocks of the Sierra Nevada of California. Bull. Geol. Soc. Am. iii, pp. 413-444, pl. xiii. [*Crin.*, stems in Lower Mesozoic.]
36. MINCHIN, E. A. Notes on the Cuvierian Organs of *Holothuria nigra*. Ann. N. H. (6) x, pp. 273-284, pl. xvii. [*Hol.*]  
NEWTON, E. T. [See SHARMAN & NEWTON (46).]
37. NICKLÈS, R. Recherches Géologiques sur les Terrains Secondaires et Tertiaires de la Province d'Alicante et du Sud de la Province de Valence. Ann. Hébert, i, pp. 1-219, pls. i-x.  
Pp. 202-204, and pls. viii & ix (parts) refer to Echinoderms.
38. NOETLING, F. Field Notes from the Shan Hills. [See Record for 1891.] Critical note by F. A. B.; Geol. Mag. (n.s.) ix, p. 521. [*Cyst.*]
39. EHLERT, D. P. Description de deux Crinoïdes nouveaux du Dévonien de la Manche. Bull. Soc. Géol. (3) xix, pp. 834-853, pl. xviii. [*Crin.*]
40. RAMSAY, E. P. Catalogue of *Echinodermata* in the Australian Museum. Part i. 2nd Ed. Sydney: 1891, 8vo, vii & 60 pp., 4 pls.
41. REED, F. B. C. Woodwardian Museum Notes. Geol. Mag. (n.s.), (iii), ix, pp. 548 & 549. [*Crin.*]
42. RIGAUX, E. Notice géologique sur le Bas Boulonnais. Mém. Soc. Acad. Boulogne, xiv, p. 108, pls. i & ii. [*Ech.*, *Ast.*, *Oph.*, *Crin.*, localities and horizons; especially Jurassic.]  
ROBERTS, T. [See BLAKE, J. F. (13).]
43. ROTHPLETZ, A. Die Perm-, Trias-, und Jura-Formation auf Timor und Rotti im indischen Archipel. Palaeontogr. xxxix, pp. 57-106, pls. ix-xiv. [*Crin.*, *Ech.*]
44. SEELIGER, O. Die Embryonal-entwicklung der *Comatula* (*Antedon rosacea*). Zool. Anz. xv, pp. 391-393. [*Crin.*]
45. —. The Embryonic Development of *Comatula* (*Antedon rosacea*). Ann. N. H. (6) x, pp. 481-483, Dec. [*Crin.*]  
A translation of the preceding.
46. SHARMAN, G., & NEWTON, E. T. On a New Form of Agelacrinites (*Lepidodiscus milleri*, n. sp.) from the Lower Carboniferous Limestone of Cumberland. Q. J. Geol. Soc. xlviii, pp. 150-152, pl. ii [*Cyst.*]  
SLADEN, W. P. [See BLAKE, J. F. (13).]

- SPRINGER, F. [See WACHSMUTH & SPRINGER (50).]
47. STOLLEY, E. Die Kreide Schleswig-Holsteins. MT. Min. Inst. Kiel, i, pp. 191-309, pls. vii-x. [*Ech.*, *Crin.*]
48. ULRICH, A. Paläozoische Versteinerungen aus Bolivien. Beitr. z. Geol. u. Paleont. v. Südamerika, i, pp. 5-116, pls. i-v. Stuttgart. [*Crin.*, columnals only.]
49. WACHSMUTH, C. [A Letter on *Pentacrinus* stems in Jurassic (?) Limestones of California; see MILLS, J. E. (35), p. 428.]
50. WACHSMUTH, C., & SPRINGER, F. Description of Two new Genera and Eight Species of Camerate Crinoids from the Niagara Group. Am. Geol. x, pp. 135-144. [*Crin.*]
51. WAGNER, R. Ueber einige Versteinerungen des unteren Muschelkalks von Jena. Z. geol. Ges. xliii, pp. 879-901, pl. xlix. [*Crin.*]
52. WHITEAVES, J. F. The Fossils of the Devonian Rocks of the islands, shores, or immediate vicinity of Lakes Manitoba and Winnipeg. Geol. Surv. Canada. Contrib. to Canadian Paleont. i, pt. iv, pp. 255-359, pls. xxxiii-xlvi. [Advance sheets to p. 318 and pl. xi, Sept.; the rest Dec.] [*Crin.*, p. 276, fragments of *Ctenocrinus* sp.]
53. WILLIAMSON, W. C. Exhibit and Remarks on *Astropecten orion*, Kellaways Rock, Pickering, Yorkshire. P. Geol. Soc. 1892, pp. 184 & 185. [*Ast.*]
54. WOHRMANN, S. VON, & KOKEN, E. Die Fauna der Raibler Schichten vom Schlernplateau. Z. geol. Ges. xlv, pp. 167-223, pls. vi-xvi. [*Crin.*, p. 170, columnals of *Encrinus cassianus*.]
55. WOODS, H. Catalogue of the Type Fossils in the Woodwardian Museum, Cambridge. With preface by T. McK. HUGHES. Cambridge: 1891 (publ. Jan., 1892), 8vo, xvi & 180 pp. [*Ech.*, pp. xvi & 30-34; *Ast.*, pp. 35 & 36, revised by J. W. Gregory; *Oph.*, pp. 36 & 37; *Crin.*, pp. xvi & 37-42; *Cyst.*, pp. 42 & 43, revised by F. A. Bather; *Blast.*, pp. 43 & 44; *Hol.*, p. xvi.]

## II.—BIOLOGY.

### (a.) ANATOMY.

*Echinodermata*: general account; BATHER, (5) p. 84.

*Holothurioidea*: Cuvierian organs of *Holothuria* and *Muelleria*; LUDWIG & BARTHELS (32): of *Holothuria nigra*; MINCHIN (36).—The wheel-spicules ("Rädchen") of *Synaptidae*; LUDWIG (31).

*Echinoidea*: Interambulacra of *Archæocidaris selwyni*, and possible new genus; ETHERIDGE (20).—The buccal membrane, its origin and history; the auricles, their structure and development, pp. 36 *et seq.*; the dental apparatus, its structure and development, pp. 40 *et seq.*; Muscles of dental

apparatus, p. 42; LOVEN (30).—Corona of the *Cidaridæ*; LOVEN (p. 18).

*Asteroidea*: General structure and homologies of skeleton in *Culci* HARTLAUB, (25) p. 99.—Ambulacra of *Palæaster*, new subgenus *Monter*; ETHERIDGE (20).—Detailed description of oral surface of *Palæa eucharis*; COLE (15).

*Ophiuroidea*: Large calycinal plates of young *Pectinura*, described; figured, p. 176; arm-ossicles of *Ophioteropsis elegans*, and of *Ophiuro* generally as basis of classification, pp. 176–178; radial shields of *Opimaza obscura*, p. 182; BELL (9).—Ovoid gland, p. 134; Hæmal syst. p. 140; genital organs (p. 142) of *Amphiura squamata*; MACBRI (33).

*Crinoidæ*: New terms suggested: "Super-radials" and "Infer-radials" for halves of transversely bisected radials; "Primibrachs, Secundibrachs &c.," for series of non-pinnulate arm-ossicles, or brachials; "Monochals, Distichals, Tetrastichals, &c.," for the same when pinnulae corresponding names for intercalated and interrational plates, by prefix "Inter"; "Deltoids," for certain tegmental plates; "Cirrals," "Radicals" and "Imperforate articulation"; BATHER (1).—Arms of *Tribrachocrinus*; ETHERIDGE, (20) p. 87.—Axial folds of cup-plates as connected with dorsal nervous system, p. 840; radiate ridging of cup-plates distinguished from axial folds (q.v.), p. 841; interrational plates of their morphological importance, p. 842; arms, their palæontological development, p. 846; stem of *Diamenocrinus* compared with that of *Herpetocrinus* and others, p. 848; stem angles and cirri, Wachsmuth's Law of Orientation discussed, p. 849; base, dicyclic and monocyclic types, p. 852; OEHLERT (39).—Tegmen of *Encrinurus wagneri* carefully described and compared with those of recent forms, p. 879; regeneration of arms in *Encrinurus wagneri*, p. 887; arms of *Encrinurus aculeatus*, p. 887; WAGNER (51).—Tegmen, orals of *Idiocrinus ventricosus*; WACHSMUTH SPRINGER, (50) p. 138.—Structure of dorsal cup in *Hypocrinus*; ROSENFELD, (43) p. 75.—Roots of *Glyptocrinus* and *Heterocrinus*; DYER (18).—Arms of *Cyathocrinus*, the branching (p. 218), the axial canal (p. 223), the covering-plates (p. 224); anal tube of *Cyathocrinus*, p. 224; tegmen of *Cyathocrinus*, p. 225; BATHER (4).—Anal tube, detailed description of structure in *Mastigocrinus*, p. 198; stem, alternate arrangement of pentameres in *Mastigocrinus*, p. 200; BATHER (3).—Arms, peculiarities of branching, p. 193; anal tube, articulation plates, p. 194, and (3) p. 199; BATHER (2).—Abnormal structure of dorsal cup in *Millerocrinus mespiliformis*; BOEHM (14).—Abnormal structure of dorsal cup in *Encrinurus gracilis*; ECK (19).—Abnormal dorsal cup, 4-rayed, *Platycrinurus pileatus*; REED (41).—Abnormal structure of dorsal cup in *Hypocrinus pyriformis*; ROSENFELD, (43) p. 75. Nervous system, dorsal; OEHLERT, (39) p. 840.

*Cystidea*: Under-side and internal framework of *Agelacrinus pileus* MILLER & FABER, (34) p. 85.

## (b.) PHYSIOLOGY.

Water-pore and madreporic plate, their functions ; FIELD, (21) p. 120.—Enlarged *Crinoid* stems ; ETHERIDGE, (20) p. 117.—Ejection of Cuvierian organs in *Holothuria* ; MINCHIN (36).

## (c.) GENERAL.

Relation of Crinoid faunas to environment in N. American Palæozoic rocks ; KEYES, (27) pp. 291–293.

Variation in species-characters, colour, calcification, &c. ; BELL, (8) pp. 520, 521, 523, 527, & 528.

Echinoderm larva, ancestral or cœnogenetic ? ; FIELD, (21) p. 118.

Ancestral Echinoderm ; FIELD, (21) p. 121.

Radial symmetry secondarily acquired ; FIELD, (21) p. 121.

Phylogeny of *Synaptidæ*, based on wheel-spicules ; LUDWIG, (31) p. 363.

## (d.) DEVELOPMENT.

General Echinoderm embryology : Gonads derived from peritoneal cells, as in other *Cœlomata* ; MACBRIDE, (33) p. 149.

Corona of *Cidaridæ* and of *Echinoidea Ectobranchiata*, its gradual growth ; descriptions of the young of *Abatus*, *Goniocidaris*, *Echinus*, *Strongylocentrotus* ; provisional sucking-feet in larval *Echinoids*, pp. 4, 5, & 12 ; intestine of larval *Echinoids*, pp. 4 & 7 ; skeleton system of larval *Echinoids* ; LOVEN (30).

*Asterias vulgaris* : Oogenesis, p. 106 ; spermatogenesis, p. 107 ; cleavage of ovum, p. 107 ; mesenchyme formation, pp. 108 & 116 ; bipinnaria of, p. 108 ; enterocoel formation, pp. 109 & 115 ; waterpores in larva of, p. 110 ; ciliated bands in larva of, p. 112 ; FIELD (21).

Embryonic development of genital organs, ovoid gland, axial and aboral sinuses in *Amphiura squamata* ; MACBRIDE (33).

Growth of *Cyathocrinus* ; BATHER, (4) p. 223.

Early stages of *Antedon* ; abnormal bigastric embryo of *Antedon* ; development of nervous system in *Antedon* ; SEELIGER (44).

## III.—DISTRIBUTION.

## A.—GEOGRAPHICAL.

British area, W. Coast of Ireland : *Synapta*, *Psolus*, *Thyone*, *Holothuria*, *Antedon*, *Astropecten*, *Psilaster*, *Luidia*, *Porania*, *Asterina*, *Cribrella*, *Stichaster*, *Asterias*, *Ophiura*, *Amphiura*, *Ophiocoma*, *Ophiothrix*, *Ophiobyrsa*, *Cidaris*, *Phormosoma*, *Asthenosoma*, *Echinus*, *Spatangus* ; BELL (8).

British area, S. W. Ireland : *Ophiobyrsa hystrix* ; BELL (9).



Distribution of European and American Echinoid faunas; GREGORY (22).

Indian Ocean and Archipelago: species of *Culcita*; HARTLAUB, (25) p. 75.—Indian Ocean, Seychelles: *Ophioteresis elegans*; BELL (9).—Mauritius: *Antedon emendatrix*; BELL (10).

N. W. Australia, Bassett-Smith bank: *Ophiomaza obscura*; BELL (9).

Pacific Ocean: species of *Culcita*; HARTLAUB, (25) p. 75.

General distribution of the genus *Culcita*; HARTLAUB, (25) p. 75.

#### B.—GEOLOGICAL.

Tertiary: of Australia, *Laganum decagonale*, *Schizaster*, *Macropneustes decipiens*; GREGORY (24).

Pliocene: Echinoid faunas of Europe and America; GREGORY, (22) p. 107.—Pliocene?: Barbados, *Cystechinus crassus*; JUKES-BROWNE & HARRISON, (26) p. 194.—Tertiary (Miocene or Pliocene), top of Oceanic series, Barbados, *Archaeopneustes abruptus*; GREGORY, (23).

Miocene: Echinoid faunas of Europe and America; GREGORY, (22) p. 105.

Oligocene: Echinoid faunas of Europe and America; GREGORY, (22) p. 104.

Eocene: Echinoid faunas of Europe and America; GREGORY, (22) p. 104.—Mid. Eocene, Spain: *Arachnopleurus reticulatus*, D. & S. NICKLÈS (37).—Mid. Murravian, Australia, *Cassidulus florescens* and oth Echinoids; GREGORY (24).

Cretaceous: Echinoid faunas of Europe and America; GREGORY, (22) p. 103.—Maëstrichian of Almaceres: *Isopneustes heberti*, n. sp.; NICKLÈS (37).—(Senonian) Schleswig Holstein: *Micraster glyphus*, *M. haasi*, *M. gottschei*, *M. schraederi*, *M. gibbus*, *Echinocorys vulgaris*, *Offaster pilul*, *O. corculum*, *Cardiaster lehmanni*, *Stegaster facki*, *Echinoconus vulgar*, *Pentacrinus carinatus*, *P. bicoronatus*, *Austinocrinus zitteli*, *A. rothplet*, *A. meyni*, *Bourgueticrinus*, *Antedon*; doubtful, *Asteroides*; STOLLEY (4).—(Cenomanien), Rouen: *Cidaris cenomanensis*; BIGOT (11).

Jurassic:—(Kellaways Rock), Yorkshire, *Astropecten orion*; WILLIAMSON (53).—Normandy: distribution of Echinoids; BIZET (12).—(Ren gerithone), Baden: *Balanocrinus pentagonalis* and *Goniaster impressu* LENT (28).—(Oberer weisser Jura), Sontheim a. d. Brenz, *Millericrin mespiliformis*; BOEHM (14).—(Bathonian) p. 42, (Oxfordian) p. 4 (Corallian) p. 59, various Echinoids and Crinoids; (Astartian and Kimmeridgian), Echinoids, Asteroids, Crinoids, and an Ophiurella, pp. 63–8 (Portlandian), various Echinoids, p. 85; (Bas-Boulonnais): RIGAUX (4).—Sierra Nevada, California: *Pentacrinus* stems; MILLS, (35) p. 428.

Trias: (Lower Muschelkalk), Jena, *Encrinurus wagneri* and *E. aculeat* WAGNER (51).—(Chorzower Beds), Gogolin, Upper Silesia, *E. gracili* ECK (19).—(Dolomite, above Raibler Beds), Schlern, *E. cassianus*; WEHMANN & KOKEN (54).

Permian-Jurassic: Echinoid faunas of Europe and America; GREGORY, (22) p. 103.

Permian : Timor, *Hypocrinus mulleri*, H. (?) *pyriformis* ; Timor and Rotti, columnals of *Platycrinidae* and other *Crinoids* ; Echinoid spine ; ROTHPLETZ (43).

Carboniferous : Echinoid faunas of Europe and America ; GREGORY, (22) p. 102.

Permian-Carboniferous : Australia, N.S.W., *Archæocidaris*, *Palæaster*, *Poteriocrinus*, *Tribrachiocrinus*, *Phialocrinus* ; ETHERIDGE (20).

Carboniferous : Australia, N.S.W., *Actinocrinus*, *Periechocrinus*, *Platycrinus*, *Symbathocrinus* ; ETHERIDGE (20).—(Osage Limestone), Mississippi Basin : change in Crinoid faunas ; KEYES, (27) p. 291.—(Keokuk), Mississippi Valley : numerous *Crinoids* recorded, with remarks on their palæontological development ; BEACHLER, (7) pp. 94–96.—(Lower), Cumberland and Northumberland : *Lepidodiscus mulleri* ; SHARMAN & NEWTON (46).

Devonian : (*Stringocephalus* beds), Manitoba, *Ctenocrinus* ; WHITEAVES (52).—(Hamilton Shales), Hamilton, N.Y. : *Palæaster eucharis* ; COLE (15).—Lower Dev. la Manche, France : *Ctenocrinus* and *Diamenocrinus* ; OEHLERT (39).—Bolivia : undeterminable fragments of *Crinoids* ; ULRICH, (48) p. 83.

Ordovician : Burmah : *Echinospaera* ; NOETLING (38).—Central Piedmont, Virginia : Crinoid remains apparently of Trenton age, and supposed to be allied to *Schizocrinus*, *Heterocrinus*, and *Poteriocrinus* ; DARTON. —(Hudson R. gr.), Cincinnati : *Cyclocystoides* and *Agelacrinus* ; MILLER & FABER (34).

Silurian : (Niagara), Indiana : *Holocystites affinis* ; MILLER & FABER (34).—Indiana : *Idiocrinus elongatus*, *I. ventricosus*, *Hyptiocrinus typus*, *Callicrinus beachleri*, *Melocrinus oblongus*, *M. parvus* ; Tennessee, *Eucalyptocrinus lindahli*, *Melocrinus roemeri* ; Kentucky, *Melocrinus oblongus*, WACHSMUTH & SPRINGER (50).—(Niagara), Indiana : *Pisocrinus*, *Zophocrinus*, *Stephanocrinus*, *Caryocrinus*, *Holocystites* ; BEACHLER (6).—(Wenlock), Dudley, England : *Botryocrinus quinquelobus*, BATHER (2) ; *Mastigocrinus loreus*, BATHER (3) ; *Cyathocrinus acinotubus* and *C. valatus*, BATHER (4).

## IV.—SYSTEMATIC.

### 1. HOLOTHURIOIDEA.

A † prefixed indicates that the reference or the paragraph following is palæontological.

*Acanthotrochus* : wheel-spicules ; LUDWIG, Z. wiss. Zool. liv, p. 358.

*Bohadschia marmorata*, MINCHIN, Ann. N. H. (6) x, p. 275.

*Chiridota*, wheel-spicules of, p. 352 ; *C. lævis*, Fabr., *rotifera*, Pourt., *purpurea*, Less., *contorta*, Ludw., p. 357 ; *C. pisanii*, Ludw., p. 352 ; *C. rufescens*, Br., *variabilis*, Semp., *amboinensis*, Ludw., *liberata*, Sluit., p. 354 ; LUDWIG, Z. wiss. Zool. liv.

† *Chiridota convexa*, Whidb., *C. ? gracillima*, Whidb. ; WOODS, Cat. Typ. Foss. p. xvi.

- Holothuria catanensis, impatiens*, p. 275, *tubulosa, sanctori*, p. 281, *nigra*, p. 273; MINCHIN, Ann. N. H. (6) x. *H. nigra*, auct., *intestinalis*, A. & R., *tremula*, Gunn.; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 522. *H. poli*, Delle Chiaje, *forskali*, Delle Chiaje, *catanensis*, Grube (sub *forskali*), *lamperti*, Ludw., *lagoena*, Haacke, *klunzingeri*, Lampert, *pervicax*, Sel., *marenzelleri*, Ludw., *marmorata*, Jaeg., *fusco-cinerea*, Jaeg.; *H. koellikeri*, Semp., noticed: LUDWIG & BARTHELS, Z. wiss. Zool. liv, p. 632.
- Muelleria mauritiana*, Quoy. & Gaim., noticed; LUDWIG & BARTHELS, Z. wiss. Zool. liv, p. 632.
- Myriotrochus*, wheel-spicules of, *M. rinki*, Steenstrup; LUDWIG, Z. wiss. Zool. liv, p. 359.
- Oligotrochus vitreus*, wheel-spicules; LUDWIG, Z. wiss. Zool. liv, p. 359.
- Psolus* sp., juv.; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 521.
- Synapta digitata*, Mont.; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 521.
- Thyone raphanus*, Düb. & Kor.; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 522.
- Trochoderma*, wheel-spicules; LUDWIG, Z. wiss. Zool. liv, p. 358.
- Trochodota venusta*, Semon, p. 355, *studerii*, Theel, p. 358, wheel-spicules; LUDWIG, Z. wiss. Zool. liv.

## 2. ECHINOIDEA.

- †An Echinoid spine: *Radiolus radiatus-tubulatus*, Permian, Timor, described and figured; ROTHPLETZ, Palæontogr. xxxix, p. 74.
- Abatus cavernosus*, Phil.; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, p. 4.
- †*Acrosalenia decorata*, Haime, Corallian Boulonnais, p. 59, Astartian Boulonnais, p. 63, Kimmeridgian Boulonnais, p. 69, *A. spinosa*, Ag., *lycetti*, Wright, *pustulata*, Forbes, p. 42, *hemicidaroides*, Wright, *legayi*, R., *pulchella*, Cott., *porifera*, Cott., *marioni*, Cott., *lamarcki*, Phill., *bradfordiensis*, Phill., *wastensis*, R., *lowei*, Wright, Bathonian Boulonnais, p. 43, *königi*, Desm., Portlandian Boulonnais, pp. 80 & 81: RIGAUX. *A. rarispina*, McCoy; see *Hemicidaris minor*; *A. sp.*; WOODS, Cat. Type Foss. p. 30.
- †*Agassizia*; GREGORY, Bull. Geol. Soc. Am. iii, pp. 105–107.
- †*Anorthopygus orbicularis*, Cotteau; LOVEN, Bih. Sv. Ak. Handl. xviii, (4) No. 1, p. 51.
- Arachnoides placenta*, Linn., p. 63, *selandia*, Gray, p. 65; LOVEN, Bih. Sv. Ak. Handl. xviii, (4) No. 1.
- †*Arachnopleurus reticulatus*, Duncan & Sladen, Mid. Eocene, Spain; NICKLÈS, Ann. Hébert, i, p. 204, pl. viii, figg. 8 & 9.
- †*Arbacia inflata*, McCoy, see *Cottaldia* species.
- †*Archæocidaris urei*, Fleming; WOODS, Cat. Type Foss. p. 30.
- †*A. ? selwyni*, n. sp., Permo-Carboniferous, New South Wales; ETHERIDGE, Pal. Mem. N.S.W. v, p. 67.

- † *Archæopneustes*, n. g. (type, *Palæopneustes hystrix*, A. Ag.), with *A. abruptus*, n. sp., Upper Tertiary, Barbados ; GREGORY, Q. J. Geol. Soc. xlviii, p. 163.
- † *Archæopneustes* ; GREGORY, Bull. Geol. Soc. Am. iii, p. 107.
- Aspidodiadema antillarum*, A. Ag. ; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, p. 32.
- † *Asterostoma cubense*, Cotteau, referred to *Archæopneustes*, and *jimenoi*, Cotteau, referred to *Palæopneustes* ; GREGORY, Q. J. Geol. Soc. xlviii, p. 167.
- Asthenosoma hystrix*, Wyv. Th., variation in colour and calcification, *A. fenestratum*, regarded as syn. ; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 526. *A. varium*, Grube ; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, pp. 26, 45, 52.
- † *Australanthus*, Bittn., adopted as a subgenus of *Cassidulus*, by GREGORY, Geol. Mag. (n.s.) Dec. iii, ix, p. 436.
- † *Breynella* : in Eocene of North America ; GREGORY, Bull. Geol. Soc. Am. iii, p. 104.
- † *Cardiaster suborbicularis*, see *Holaster*.
- † *Cardiaster lehmanni*, n. sp., Senonian, Schleswig-Holstein ; STOLLEY, MT. Min. Inst. Kiel, i, p. 267.
- † *Cassidulus florescens*, n. sp., Upper Eocene ; GREGORY, Geol. Mag. (n.s.) Dec. iii, ix, p. 435.
- Centrostephanus coronatus*, A. Ag. ; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, p. 32.
- Cidaris papillata*, Leske ; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 526, and LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, pp. 19 & 52 : *C. thouarsi*, Ag. ; LOVEN, t. c. p. 21.
- † ; *Cidaris* : in Eocene of N. America ; GREGORY, Bull. Geol. Soc. Am. iii, p. 104. *C. blumenbachi*, Münt., *florigemma*, Phill., *houlefortensis*, Cott., Oxfordian, Boulonnais, p. 52, *C. species*, Bathonian, Boulonnais, p. 42, *C. coronatus*, Goldf., Astartian, Boulonnais, p. 67, *C. florigemma*, Phill., p. 73, *beaugrandi*, Cott., p. 75, Kimmeridgian, Boulonnais, *C. legayi*, R. S., p. 81, *florigemma*, Phill., p. 85, Portlandian, Boulonnais, *C. florigemma*, Phill., Corallian, Boulonnais, p. 59 ; RIGAUX (42). *C. gaultina*, Forbes, p. 30, *sedgwicki*, Seeley, *C. species*, p. 31 ; WOODS, Cat. Type Foss. *C. melitensis*, Wright ; GREGORY, Bull. Geol. Soc. Am. iii, p. 105. *C. cenomanensis*, Cott. ; BIGOT, Bull. Soc. L. Norm. (4) v, p. 54.
- Clypeastridæ* : dental system ; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, p. 55.
- Clypeaster reticulatus*, Linn. ; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, p. 55.
- † *Clypeus altus*, McCoy, *excentricus*, McCoy (sub *C. sinuatus*), *sinuatus*, Leske ; WOODS, Cat. Type Foss. p. 31. *C. plotii*, Klein, *milleri*, Wright, Bathonian, Boulonnais ; RIGAUX, p. 42.
- † *Collyrites bicordata*, Des., Oxfordian, Boulonnais ; RIGAUX, p. 51. *C. ovalis*, Leske ; WOODS, Cat. Type Foss. p. 31.

- *Catalina* species: Woods, Cat. Type Foss. p. 31.  
 - *Cyprina* *supracornu* Cott., Astartian, Boulonnais, p. 65, *C. supracornu* Cott., Kimmeridgian, Boulonnais, pp. 72 & 73, *C. supracornu* Rg. Portlandian, Boulonnais, p. 81; RIGAUX. *C. impressa*, Seeley, see *Echinocyphus*.  
 - *Cyprina* *crassa* Greg.; JONES-BROWNE & HARRISON, Q. J. Geol. Soc. xvii, p. 134 and GREGORY, Bull. Geol. Soc. Am. iii, p. 107.  
*Dicella* *acuta* Linn.; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, pp. 31, 36, 51.  
 - *Dicella* *angulata* and *intertuberculata*, Seeley, see *Pseudodidyma*.  
*D. parvifrons*? *scriptum*, Seeley, see *Diplopodia*.  
 - *Diplopodia* *parvifrons* McCoy, *scriptum* [sic], Seeley; Woods, Cat. Type Foss. p. 31.  
 - *Dicella* *cylindrica* Ag.; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, pp. 47, 51. *D. marginalis*, McCoy, see *Holotypus hemisphaericus*. *D. minima* DENT; Woods, Cat. Type Foss. p. 31.  
 - *Dynaster* *applanata* McCoy, see *Calligrites ovalis*.  
 - *Echinocentrus*, = *Bryozoa*; GREGORY, Bull. Geol. Soc. Am. iii, p. 214. *E. quinquefaria* Say, discussed: GREGORY, l. c. p. 105. *E. trachinota*, Linn.: GREGORY, l. c. p. 107.  
 - *Echinocentrus*: in Eocene of N. America; GREGORY, Bull. Geol. Soc. Am. iii, p. 214. *E. excentricus*; GREGORY, l. c. p. 107.  
*Echinocentrus* *peronii* Lamk.; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, p. 55.  
 - *Echinocentrus* *præobolus* Wright, *clavicularis*, Des., *goldfussi*, Des., *angulus*, Des., *clavatus*, d'Orb., *woodwardi*, Wright, *quadratus* Wright, Bathonian, Boulonnais, p. 42: *E. scutatus*, Lam., Corallian, Boulonnais, p. 59: *E. scutatus* Lam., Astartian, Boulonnais, p. 65. *E. peronii*, Cott., Kimmeridgian, Boulonnais, p. 72: *E. haime* Wright, Boleian, Boulonnais, p. 78: *E. rigaudi*, Cott., p. 8. *bradlei*, Wright, Portlandian, Boulonnais, p. 85; RIGAUX (42).  
*Echinocentrus* *nigra*, Mol.; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, p. 33.  
 - *Echinocentrus* *raugeri*, d'Orb.: STOLLEY, MT. Min. Inst. Kiel, i, p. 26. *E. subrotundus*, Mantell; Woods, Cat. Type Foss. p. xvi.  
 - *Echinocentrus* *raugeri*, Breyer, (= *E. scutatus*); STOLLEY, MT. Min. Inst. Kiel, i, p. 264.  
*Echinocentrus* *angulosus*, Leske; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, p. 69.  
 - *Echinocyphus* *impressus*, Seeley; Woods, Cat. Type Foss. p. 32.  
*Echinocyphus* *mathaei*, Blainv., p. 33, *lucunter*, Linn., pp. 43, 44, 51, 52, 55. LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1.  
*Echinus* *acutus*, Lamk., *esculentus*, Linn., *elegans*, Düb. & Kor., p. 52. *microstoma*, Wyv. Th., p. 529; BELL, Sci. P. R. Dubl. Soc. (n.s.) vi. *E. parvituberculatus*, Blainv.; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, p. 11. *E. miliaris*, Leske, p. 161, *esculentus*, Linn., pp. 33, 5. *angulosus*, Leske, p. 33; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1.

- † ; *E. diademata*, McCoy, see *Stomechinus germinans*. *E. petallatur*, McCoy, see *S. gyratus*.
- † *Enallaster columbianus*, Lea, *karsteni*, de Lor. ; GREGORY, Bull. Geol. Soc. Am. iii, p. 103.
- Encope emarginata*, Leske ; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, p. 65.
- † *Eocidaris*, abandoned ; GREGORY, Bull. Geol. Soc. Am. iii, p. 102.
- † *Eupatagus decipiens*, Tate ; see *Macropneustes*.
- † *Euspatangus*, in Eocene of N. America ; GREGORY, Bull. Geol. Soc. Am. iii, p. 104.
- † *Galerites albogalerus*, Leske ; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, p. 49.
- † *Galeropygus agariciformis*, Forbes ; WOODS, Cat. Type Foss. p. 32.
- † *Goniophorus lunatus*, Ag., var. *minutus*, Seeley ; WOODS, Cat. Type Foss. p. 32.
- † *Glypticus hieroglyphicus*, Ag., Corallian, Boulonnais ; RIGAUX (42), p. 59.
- Goniocidaris canaliculata*, A. Ag. ; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, p. 5.
- † *Hardouinia*, adopted as subgenus of *Breynella*, by GREGORY, Geol. Mag. (n.s.) iii, ix, p. 436.
- † *Hemiaster mccoysi*, Seeley ; WOODS, Cat. Type Foss. p. 32.
- † ; *Hemicidaris constuens*, McCoy ; see *Acrosalenia* sp. *H. minor*, Ag. ; WOODS, Cat. Type Foss. p. 32. *H. luciensis*, d'Orb., *legayi*, R., *langrunensis*, Cott., Bathonian, Boulonnais, p. 42, *intermedia*, Forbes, Oxfordian, Boulonnais, p. 52, *intermedia*, Forbes, Corallian, Boulonnais, p. 59, *hoffmanni*, Ag., p. 65, *agassizi*, Röm., *intermedia*, Forbes, Astartian, Boulonnais, p. 67, *intermedia*, Forbes, p. 72,  *davidsoni*, Wright, p. 75, Kimmeridgian, Boulonnais, *purbeckensis*, Forbes, Bolonian, Boulonnais, p. 78, *davidsoni*, *brillensis*, *morinicum*, R. S., Portlandian, Boulonnais, pp. 80 & 81 ; RIGAUX (42).
- † *Hemipedina tuberculosa*, Wright, Oxfordian, Boulonnais, p. 52, *bouchardi*, Wright, Portlandian, Boulonnais, p. 81 ; RIGAUX.
- † ; *Holaster simplex*, Shumard, = *H. lævis*, Luc. ; GREGORY, Bull. Geol. Soc. Am. iii, p. 104. *H. suborbicularis*, Brong. ; WOODS, Cat. Type Foss. p. 32.
- † ; *Holactypus depressus*, Des., Bathonian, Boulonnais, p. 42, *depressus*, Phill., Oxfordian, Boulonnais, p. 51, *corallinus*, d'Orb., Astartian, Boulonnais, pp. 63 & 65, *corallinus*, d'Orb., Corallian, Boulonnais, p. 59 ; RIGAUX. *H. depressus*, Leske ; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, p. 51. *H. planatus*, Roem. ; GREGORY, Bull. Geol. Soc. Am. iii, p. 104. *H. hemisphaericus*, Ag. ; WOODS, Cat. Type Foss. p. 32.
- † *Isopneustes heberti*, Maëstrichian of Almaceres, NICKLÈS, Ann. Hébert. i, p. 202, pl. ix, figg. 12 & 13, n. sp.
- † *Laganum decagonale*, Lesson, n. var. *rictum*, Tertiary, W. Australia ; GREGORY, Geol. Mag. (n.s.), Dec. iii, ix, p. 433. *L. decagonale*, Blainv. ; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, p. 68.

- Lytechinus semituberculatus*, Val. ; LOVEN, Bih. Sv. Ak. Handl. xviii No. 1, p. 33.
- † *Macropneustes decipiens*, Tate, olim *Eupatagus* ; GREGORY, Geol. A (n.s.), Dec. iii, ix, p. 436.
- † *Mellita sexforis* ; GREGORY, Bull. Geol. Soc. Am. iii, p. 107.
- † ; *Micraster glyphus*, Cotteau, p. 255, *gibbus*, Lam., p. 260 ; STOLLEY, MT. Min. Inst. Kiel, i.
- † *M. haasi*, p. 257, *gottschei*, p. 258, *schröderi*, Senonian, Schleswig-Stein, STOLLEY, MT. Min. Inst. Kiel, i, p. 259, n. spp.
- † *Monostychia*, in Eocene of N. America ; GREGORY, Bull. Geol. Soc. Am. iii, p. 104.
- † *Mortonia rogersi*, Desor, synonymy discussed ; GREGORY, Bull. Geol. Soc. Am. iii, p. 105.
- † ; *Nucleolites aequalis*, McCoy, *clunicularis*, Phill., and *pyramidalis*, McCoy, *planulatus*, McCoy ; WOODS, Cat. Type Foss. p. 32.
- † *Offaster pilula*, Lam., *corculum*, Goldf. ; STOLLEY, MT. Min. Inst. Kiel, i, p. 265.
- † *Palæechinus gigas*, McCoy, p. 32, *intermedius*, Keeping, *sphaericus*, McCoy, p. 33 ; WOODS, Cat. Type Foss.
- † ; *Pelanechinus* : LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, p. 1. *P. corallinus*, Wright ; WOODS, Cat. Type Foss. p. 33.
- † *Pedina legayi*, Cott, Bathonian, Boulonnais, p. 42, *sublevis*, Ag., Corallian, Boulonnais, p. 59 ; RIGAUX.
- † *Peltastes wrighti*, Desor, p. xvi, *hieroglyphica*, Keeping, *wiltshirei*, Secl. *wrighti*, Desor, p. 33 ; WOODS, Cat. Type Foss.
- † ; *Periarchus*, accepted ; GREGORY, Bull. Geol. Soc. Am. iii, p. 10. *P. altus*, Conrad ; GREGORY, *l. c.* p. 105.
- † *Perischodonus biserialis*, McCoy ; WOODS, Cat. Type Foss. p. 33.
- Phormosoma placenta*, Wyv.-Th. ; BELL, Sci. P. R. Dubl. Soc. (n.s.), v, p. 526.
- † *Pileus hemisphaericus*, Desor ; LOVEN, Bih. Sv. Ak. Handl. xviii (No. 1, p. 51.
- † *Plesiospatangidike*, revised ; GREGORY, Q. J. Geol. Soc. xlvi, p. 165.
- † *Polycyphus normannus*, Des., Bathonian, Boulonnais, p. 42 ; RIGAUX.
- † *Pseudasterostoma jimenoi*, see *Asterostoma jimenoi*.
- † *Pseudocidaris quenstedtii*, Cott., Oxfordian, Boulonnais, p. 52, *thurmanii*, Et., Corallian, Boulonnais, p. 59 ; RIGAUX.
- † ; *Pseudodiadema depressum*, Ag., *subcomplanatum*, Des., Bathonian, Boulonnais, p. 42, *superbum*, Des., *pellati*, Cott., *princeps*, Des., *aroviensis*, Des., *bipunctatum*, Des., Oxfordian, Boulonnais, p. 52, *florescens*, Ag., *hemisphaericum*, Ag., Corallian, Boulonnais, p. 59, *mamillatum*, Rör. p. 63, *planissimum*, Astartian, Boulonnais, p. 67, *mamillatum*, Rör. Kimmeridgian, Boulonnais, p. 75, *planissimum*, Bolonian, Boulonnais, p. 78, *sauvagei*, Rig., *baccatum*, R. S., p. 81, *thirriae*, Etall., Poilandian, Boulonnais, p. 85 ; RIGAUX. *P. barretti*, S. P. Woodward, *carteri*, S. P. Woodw., *fungoideum*, Seeley, p. 33, *intertuberculatum*, Seeley, *inversum*, Seeley, p. 34 ; WOODS, Cat. Type Foss.

- †; *Pygaster laganoides*, Ag., *trigeri*, Cott., Bathonian, Boulonnais, p. 42 *umbrella*, Astartian, Boulonnais, p. 66, *macrocyphus*, Wright, Kimmeridgian, Boulonnais, p. 75, *gresslyi*, Des., Corallian, Boulonnais, p. 59; RIGAUX (42). *P. semisulcatus*, Phill.; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, p. 51. *P. brevifrons*, McCoy, see *P. semisulcatus*. *P. semisulcatus*, Phill.; WOODS, Cat. Type Foss. p. 34. *P. sublaevis*, McCoy, see *Galeropygus agariciformis*.
- † *Pygurus michelini*, Cott., Bathonian, Boulonnais, p. 42, *blumenbachi*, Ag., Corallian, Boulonnais, p. 59, Kimmeridgian, Boulonnais, pp. 70 & 72, and Astartian, Boulonnais, pp. 63 & 65, *jurensis*, Marc., Astartian, Boulonnais, pp. 66 & 67, Kimmeridgian, Boulonnais, p. 75; RIGAUX (42).
- †; *Rhabdocidaris orbignyana*, Des., *boloniensis*, Wright, Astartian, Boulonnais, p. 67, Kimmeridgian, Boulonnais, pp. 69 & 72; RIGAUX. *R. thurmanni*, de Lor., var. *regens*, Whidb.; WOODS, Cat. Type Foss. p. 34.
- † *Rhoechinus irregularis*, Keep.; WOODS, Cat. Type Foss. p. 34.
- † *Rhynchopygus guadaloupensis*, Mich., = *R. caribbeorum*; GREGORY, Bull. Geol. Soc. Am. iii, p. 105.
- Salenia pattersoni*, Al. Ag.; LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, p. 34.
- †; *Salenia hieroglyphica*, Keep., and *S. (Hyposalenia) wiltshirei*, Seeley, see *Peltastes*; *S. woodwardi*, Seeley; WOODS, Cat. Type Foss. p. 34.
- † *Sarsella*, in Eocene of N. America; GREGORY, Bull. Geol. Soc. Am. iii, p. 104.
- † *Schizaster parkinsoni*, DeFrance, *scilla*, Desmoul.; GREGORY, Bull. Geol. Soc. Am. iii, pp. 105 & 107. *S. cuneatus*, Greg.; WOODS, Cat. Type Foss. p. xvi. *S.*, sp., W. Australia; GREGORY, Geol. Mag. (n.s.) Dec. iii, ix, p. 436.
- †; *Scutella striatula*, Rem. (pars) = *Echinarachnius excentricus*; *S. rogersi*, Morton, discussed; GREGORY, Bull. Geol. Soc. Am. iii, pp. 105 & 107. *S. quinquefaria*, Say; see *Echinanthus*.
- † *Sismondia marginalis* and *plana*, Conrad, = *Monostychia*; GREGORY, Bull. Geol. Soc. Am. iii, p. 105.
- Spatangus purpureus*, O. F. Müll., *raschi*, Loven; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 529.
- † *Spatangus columbianus*, Lea; see *Enallaster*.
- † *Stegaster fucki*, n. sp., Senonian, Schleswig Holstein; STOLLEY, MT. Min. Inst. Kiel, i, p. 268.
- †; *Stomechinus serratus*, Des., Bathonian, Boulonnais, p. 42, *S. gyratus*, Des., Oxfordian, Boulonnais, p. 52, *S. gyratus*, Ag., Corallian, Boulonnais, p. 59 (and WOODS, Cat. Type Foss. p. 34), *S. perlatus*, Ag., p. 63, Astartian, Boulonnais, *S. perlatus*, Des., Astartian, Boulonnais, p. 67, and Kimmeridgian, Boulonnais, p. 73; RIGAUX. † *S. germinans*, Phill.; WOODS, Cat. Type Foss. p. 34.
- Strongylocentrotus droebachiensis*, O. F. Müll.; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 523, and LOVEN, Bih. Sv. Ak. Handl. xviii (4), No. 1, pp. 13 & 15.



† *Temnechinus*; GREGORY, Bull. Geol. Soc. Am. iii, p. 108.

*Tripneustes gratilla*, Linn., p. 33, *esculentus*, Leske, p. 38; LOVEN, I Sv. Ak. Handl. xviii (4), No. 1.

## 3. ASTEROIDEA.

*Asterina gibbosa*, Penn.; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 525.

*Asterias rubens*, Linn., *murrayi*, Bell; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 525. *A. vulgaris*: embryology; FIELD, Q. J. Micr. Sci. (n.s.) xxxiv, p. 105.

*Astropecten sphenoplax*, W. Coast of Ireland; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 522, n. sp.

*Astropecten irregularis*, Penn.; BELL, Sci. P. R. Dubl. Soc. (n.s.) p. 522.

†; *Astropecten orion*, Forbes; WILLIAMSON, Proc. Geol. Soc. 1892, p. 1. *A. lorioli*, and *martis*, Wright, *A. suprajurensis*, Sauv., Bolon Boulonnais, p. 78; RIGAUX. *A. scarburgensis*, Wright, *A. hastin*, Forbes, p. 35, *rectus*, McCoy; WOODS, Cat. Type Foss, p. 35.

*Cribrella sanguinolenta*, O. F. Müll.; BELL, Sci. P. R. Dubl. Soc. (n.s.) p. 525.

*Culcita veneris*, Perr., pp. 73 & 96, *coriacea*, M. T., pp. 74 & 90, *n. guineæ*, M. T., pp. 74 & 77, *grex*, M. T., pp. 74 & 87, *acutispin*, Bell, pp. 74 & 95, *arenosa*, Perr., pp. 74 & 92, *pentangularis*, G. p. 74, *C. schmideliana*, Retz., pp. 75 & 97; HARTLAUB, Notes I Mus. xiv. *C. discoidea*, Lam.; see *C. schmideliana*. *C. pulverul* Perr.; see *C. novæ-guineæ*.

*Culcita plana*; HARTLAUB, Notes Leyd. Mus. xiv, pp. 74 & 84, Sa Viti, New Guinea, Phillipines, Amboina, Mauritius, n. sp.

† *Goniaster cassiope*, Kimmeridgian, Boulonnais, p. 72; RIGAUX. *G. pressæ*, Quenst.; LENT (28). *G. (Goniodiscus) rectilineus*, McCoy see *Pentagonaster*.

*Luidia sarsi*, Dub. & Kor., *ciliaris*, Phil.; BELL, Sci. P. R. Dubl. (n.s.) vii, p. 525.

† *Monaster*, n. subg. of *Palæaster*; ETHERIDGE, Pal. Mem. N.S.W. v, p. 70.

† *Palæaster (Monaster) stutchburii* and *P. (Monaster) giganteus*, Per Carboniferous, New S. Wales; ETHERIDGE, Pal. Mem. N.S.W. v, pp. 73 & 74, n. spp.

† *Palæaster (Monaster) clarkei*, De Kon., Permo-Carboniferous, New S. Wales; ETHERIDGE, Pal. Mem. N.S.W. v, p. 71. *P. eucharis*, L. oral surface; COLE, Bull. Geol. Soc. Am. iii, p. 512. *P. h. ruthveni*, Forbes, *squamatus*, Salter; WOODS, Cat. Type Foss, p. 35.

† *Palæasterina primæva*, Forbes, *ramseyensis*, Hicks; WOODS, Cat. Type Foss. p. 35.

† *Pentagonaster rectilineus*, McCoy; WOODS, Cat. Type Foss. p. 36.

† *Plumaster ophiuroides*, Wright; WOODS, Cat. Type Foss. p. 36.

- Porania pulchillus*, O. F. Müll.; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 525.  
*Psilaster andromeda*, M. & T.; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 524.  
*Randasia spinulosa*, Gray, see *Culcita coriacea*; *R. granulata*, Gray, see *C. pentangularis*. *R. luzonica*, Gray, = *Culcita*, sp.; HARTLAUB, Notes Leyd. Mus. xiv, p. 77.  
*Stichaster roseus*, O. F. Müll.; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 525.  
†*Uraster carinatus*, Wright; WOODS, Cat. Type Foss. p. 36. *U. hirudo*, ruthveni, Forbes, see *Palæaster*; *U. primævus*, Forbes, see *Palæasterina*.

#### 4. OPHIUROIDEA.

New classification of *Ophiuroids*, based on articulation of arm-ossicles, into *Streptophiuræ*, *Astrophieuræ*, *Zygophiuræ*, and arrangement of genera under these groups according to characters of minor importance; BELL, P. Z. S. 1892.

*Amphiura squamata*, M. T.; MACBRIDE, Q. J. Micr. Sci. (n.s.) xxxiv, p. 129 (embryology and anatomy). *A. filiformis*, O. F. Müll.; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 526.

*Astrophieuræ*, new ordinal name; BELL, P. Z. S. 1892, p. 180.

†*Eucladia*, H. Woodw., removed from *Ophiuroidea*; BELL, t. c. p. 182.

†*Onychaster*, M. & W., position discussed; BELL, t. c. p. 182.

*Ophiobursa hystrix*, Lym.; BELL, P. Z. S. 1892, p. 183, and Sci. P. R. Dubl. Soc. (n.s.) vii, p. 526.

*Ophiocoma nigra*, O. F. Müll.; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 526.

†*Ophioderma carinata*, Wright; WOODS, Cat. Type Foss. p. 36.

†*Ophiolepis leckenbyi*, Wright; WOODS, Cat. Type Foss. p. 36.

*Ophiomaza obscura*, Ljung.; BELL, P. Z. S. 1892, p. 182.

*Ophioteropsis*, n. g. for *O. elegans*, n. sp., Seychelles; BELL, P. Z. S. 1892, p. 179.

*Ophiothrix fragilis*, Linn., and *leutkeni*, Wyv.-Thom.; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 526.

*Ophiura ciliaris*, Linn., and *albida*, Forbes; BELL, Sci. P. R. Dubl. Soc. (n.s.) vii, p. 525.

†*Ophiura salteri*, Forbes; see *Protaster*.

†*Protaster*, Forbes, referred to *Streptophiuræ*; BELL, P. Z. S. 1892, p. 182; *P. petri*, Salter, *salteri*, Forbes, p. 36, *sedgwicki*, Forbes, p. 37; WOODS, Cat. Type Foss.

*Streptophiuræ*, new ordinal name; BELL, P. Z. S. 1892, p. 179.

†*Taniaster*, Bill., referred to *Streptophiuræ*; BELL, t. c. p. 182.

*Zygophiuræ*, new ordinal name; BELL, t. c. p. 180.

## 5. CRINOIDEA.

- Introduction to anatomy, with special reference to Fossils ; BATHER, (5) p. 87.
- †; *Actinocrinus*, ind. sp., Carboniferous, New S. Wales ; ETHERIDGE, Pal. Mem. N.S.W. v, p. 77. *A. pulcher*, McCoy (? *Periochocrinus*); WOODS, Cat. Type Foss. p. 37.
- † *Actinometra lovesi*, *wurtembergia*, P. H. Carp. ; WOODS, Cat. Type Foss. p. 37.
- † *Amphorocrinus atlas*, *olla*, McCoy ; WOODS, Cat. Type Foss. p. 37.
- Antedon bifida*, Penn. ; BELL, Sci. P. R. Dubl. Soc. (n.s.), vii, p. 522. *A. rosacea*, embryology ; SEELIGER (44).
- Antedon emendatrix*, Mauritius, BELL, Ann. N. H. (6) ix, p. 427, n. sp.
- †; *Antedon* sp. ; STOLLEY, MT. Min. Inst. Kiel, i, p. 255. *A. aspera*, Quenst., *costata*, Goldf., *depressa*, P. H. Carp., *acrobiculata*, Goldf. ; WOODS, Cat. Type Foss. p. 37.
- †; *Apiocrinus elegans*, Defr., Bathonian, Boulonnais, p. 43, *A. roissyanus*, d'Orb., Corallian, Boulonnais, p. 59; RIGAUX. *A. exustus*, McCoy ; WOODS, Cat. Type Foss. p. 38.
- † *Archæocrinus*, OEHLERT, Bull. Soc. Géol. (3) xix, p. 840.
- † *Austinocrinus silteli* (columnals only), p. 251, *rothpletzi* (columnals only) p. 252, *meyni* (columnals only), Senonian, Schleswig-Holstein, STOLLEY, MT. Min. Inst. Kiel, i, p. 254, n. spp.
- † *Balanocrinus pentagonalis*, Goldf. ; LENT, p. 624.
- † *Botryocrinus pinnulatus*, Bather, additional description ; BATHER, Ann. N. H. (6) ix, p. 192. *B. decadactylus* (Salter, MS.), Bather ; WOODS, Cat. Type Foss. p. 38.
- † *B. quinquelobus*, Wenlock Limestone, Dudley, BATHER, Ann. N. H. (6) ix, p. 189, n. sp.
- † *Bourgueticrinus cylindricus*, *milleri*, *politicus*, McCoy ; WOODS, Cat. Type Foss. p. 38. *B. ellipticus*, *B.* sp., Mill. ; STOLLEY, MT. Min. Inst. Kiel, i, p. 254.
- † *Calceocrinus abdominalis*, *fletcheri*, *gradatus*, Salter, *serialis* (Austin MS sp.) ; WOODS, Cat. Type Foss. p. 38.
- † *Callicrinus beachleri*, n. sp., Silurian, Indiana, WACHSMUTH & SPRINGER Am. Geol. x, p. 140.
- † *Caryocrinus ornatus*, Say ; BEACHLER, Am. Geol. ix, p. 408.
- † *Cheirocrinus abdominalis*, *fletcheri*, *gradatus*, *serialis*, Salter : see *Calceocrinus*.
- † *Cromyocrinus nuciformis*, McCoy ; WOODS, Cat. Type Foss. p. 38.
- †; *Ctenocrinus* sp., Devonian, la Manche ; OEHLERT, Bull. Soc. Géol. (3) xix, p. 835. *C.* sp., Mid. Devon., Manitoba ; WHITEAVES, Contr. Canad. Pal. i, p. 276.
- † *Cupressocrinus calyx*, McCoy ; see *Hydreionocrinus* ; *C. impressus*, McCoy see *H. mccoyanus*.
- †; *Cyathocrinus*, discussed and re-diagnosed ; BATHER, Ann. N. H. (6) ix, p. 202 : American and Gotland species ; BATHER, t. c. p. 213

- C. distortus*, Phill.; see *C. planus*. *C.?* Carboniferous, New S. Wales; ETHERIDGE, Pal. Mem. N.S.W. v, p. 81. *C. quinquangularis*, Phill., referred to *Botryocrinus quinquelobus*; BATHER, Ann. N. H. (6) ix, p. 189. *C. arboreus*, Salter, *nom. nud.*, referred to *Mastigocrinus loreus*; BATHER, *t. c.* p. 196. *C. acinotubus*, Ang.; BATHER, *t. c.* p. 213, and WOODS, Cat. Type Foss. p. 39. *C. arboreus, scoparius*, *C. sp.* 11, and *C. spp.*, Salter; WOODS, Cat. Type Foss. pp. xvi & 39. *C. decadactylus*, Salter; see *Botryocrinus*. *C. monile*; see *C. acinotubus*; *C. nodulosus*, Salter, = *Taxocrinus sp.*; WOODS, Cat. Type Foss. p. 39. *C. quindecimalis*, Salter; see *Botryocrinus decadactylus*. *C. squamiferus*, Salter, = *Gissocrinus*; WOODS, Cat. Type Foss. p. 39. *C. vallatus*, Wenlock Limestone, Dudley; BATHER, Ann. N. H. (6) ix, p. 221. *C. planus*, Miller, determined; BATHER, *t. c.* p. 202. *C. alutaceus (pars)*, Ang., *monile*, Salter, *nom. nud.*, *minus*, Salter, *nom. nud.*, *nodulosus*, Salter, *nom. nud.*; see *C. acinotubus*.
- † *Cyclocrinus variolarius*, Seeley; WOODS, Cat. Type Foss. p. 39.
- † *Dadocrinus kunischi*, W. & Sp.; ECK, Z. geol. Ges. xlv, p. 138.
- † *Diamenocrinus*, n. g., p. 836, for *D. jouani*, n. sp., Devonian, la Manche, p. 837; EHLERT, Bull. Soc. Géol. (3) xix.
- † *Dendrocrinus? cambrensis*, Hicks; WOODS, Cat. Type Foss. p. 40.
- † *Dimerocrinus uniformis*, Salter; *D. multiplex*, Salter, = *Encrinus speciosus*, Ang.; WOODS, Cat. Type Foss. p. 40.
- †; *Encrinus wagneri*, Ben., p. 879, *aculeatus*, Mey., p. 890; WAGNER, Z. geol. Ges. xliii. *E. cassianus*, Laube; WOEHRMANN & KOKEN, *op. cit.* xlv, p. 170. *E. gracilis*; see *Dadocrinus kunischi*.
- † *Eucalyptocrinus lindahli*, n. sp., Silurian, Tennessee, WACHSMUTH & SPRINGER, Am. Geol. x, p. 139.
- † *Extracrinus fossilis*, Blumenbach, *dichotomus*, McCoy; WOODS, Cat. Type Foss. p. 40.
- †; *Gissocrinus*, British species; BATHER, Ann. N. H. (6) ix, p. 207. *G. goniodactylus*, Phillips; WOODS, Cat. Type Foss. p. 40.
- † *Glyptasterida*, EHLERT, Bull. Soc. Géol. (3) xix, pp. 839, *et seq.*
- †; *Glyptocrinus neali, dyeri, baeri*; DYCHE, Am. Geol. x, p. 130. *G. basalis*, McCoy; *G. sp.* 1, Salter; WOODS, Cat. Type Foss. p. 40.
- †; *Herpetocrinus*; EHLERT, Bull. Soc. Géol. (3) xix, pp. 848 & 849. *H. fletcheri*, Salter; WOODS, Cat. Type Foss. p. 40.
- †; *Heterocrinus subcrassus, simplex*; DYCHE, Am. Geol. x, p. 130. *H.?* sp., Ordovician, Piedmont, Virginia; DARTON, Am. J. Sci. xlv, p. 52.
- † *Hexacrinida*; EHLERT, Bull. Soc. Géol. (3) xix, pp. 841, *et seq.*
- † *Hydreionocrinus calyz*, McCoy, *mccoyanus*, De Kon. & Le Hon.; WOODS, Cat. Type Foss. p. 40.
- † *Hypocrinus mülleri*, Beyr.; ROTHPLETZ, Paläontogr. xxxix, p. 74.
- † *H. (?) pyriformis*, Permian, Timor, ROTHPLETZ, Paläontogr. xxxix, p. 75, n. sp.
- † *Hyptiocrinus*, n. g., for *H. typus*, n. sp., Silurian, Indiana, WACHSMUTH & SPRINGER, Am. Geol. x, p. 138.
- † *Ichthyocrinus bacchus, mccoyanus*, Salter; WOODS, Cat. Type Foss. p. 41.

- † *Idiocrinus*, n. g., p. 135, for *I. elongatus*, p. 136, *I. ventricosus*, p. 137, n. spp., Silurian, Indiana; WACHSMUTH & SPRINGER, Am. Geol. x.
- † *Koninckocrinus agassizi*, Seeley; see *Torynocrinus cano.* *K. rugosus*, d'Orb.; see *Cyclocrinus variolarius*.
- † *Mariacrinus flabellatus*, Salter; see *Melocrinus*.
- † *Mastigocrinus*, n. g., p. 195, for *M. loreus*, n. sp., p. 196, Wenlock Limestone, Dudley; BATHER, Ann. N. H. (6) ix.
- † *Melocrinus flabellatus*, Salter; WOODS, Cat. Type Foss. p. 41.
- † *M. roemeri*, Silurian, Tennessee, p. 142, *oblongus*, Silurian, Indiana and Kentucky, p. 143, *parvus*, Silurian, Indiana, p. 144, WACHSMUTH & SPRINGER, Am. Geol. x, n. spp.
- †; *Millericrinus mespiliformis*, Schloth., abnormality; BOEHM, Z. geol. Ges. xliii, p. 741. *M. pratti*, Gray; WOODS, Cat. Type Foss. p. 41. *M. horridus*, d'Orb., Oxfordian, Boulonnais; RIGAUX, p. 52.
- † *Myelodactylus*; (EHLERT, Bull. Soc. Géol. (3) xix, pp. 848 & 849: see also *Herpetocrinus*.
- † *Ottawacrinus* compared with *Mastigocrinus*; BATHER, Ann. N. H. (6) ix, p. 201.
- † *Palæocrinus*, discussed; BATHER, Ann. N. H. (6) ix, p. 207.
- † *Pentacrinites briareus*, Miller; see *Extracrinus fossilis*, McCoy.
- † *Pentacrinus pentagonalis*, Goldf., *normanianus*, Lor., *cotteau*, Lor., Oxfordian, Boulonnais, p. 52, *P. amblyscalaris*, Thurm., Corallian, Boulonnais, p. 59, *P. rupellensis*, Lor., Astartian, Boulonnais, p. 67; RIGAUX (42). *P. carinatus*, Roem., *bicoronatus*, Hag.; STOLLEY, MT. Min. Inst. Kiel, i, p. 249. *P. sp.*, columnals in Jurassic, California; MILLS, Bull. Geol. Soc. Am. iii, p. 428. *P. goldfussi*, McCoy; WOODS, Cat. Type Foss. p. 41. *P. dichotomus*; see *Extracrinus*.
- † *Phialocrinus* re-defined, p. 98, *konincki*, de Kon., p. 107; ETHERIDGE, Pal. Mem. N.S.W. v.
- † *Phialocrinus princeps*, p. 110, *P. ? nodosus*, p. 112, *stephensi*, p. 113, Permo-Carboniferous, New S. Wales, ETHERIDGE, Pal. Mem. N.S.W. v., n. spp.
- † *Periechocrinus indicator*, Carboniferous, New S. Wales, ETHERIDGE, Pal. Mem. N.S.W. v, p. 78, n. sp.
- †; *P.*, sp. ind., Carboniferous, New S. Wales; ETHERIDGE, Pal. Mem. N.S.W. v, p. 79. *P. limonium*, Salter; WOODS, Cat. Type Foss. p. 41.
- † *Picteticrinus nicoleti*, Des., Bathonian, Boulonnais, p. 43, *beaugrandi*, Lor., Portlandian, Boulonnais, p. 81; RIGAUX.
- † *Pisocrinus gemmiformis*, S. A. Mill., *globosus*, Ringueb.; BEACHLER, Am. Geol. ix, p. 408.
- † *Platycrinidae*, and other *Crinoids*, "Entrochi regulares et irregulares," columnals from Permian, Timor, described and figured; ROTHPLETZ, Palæontogr. xxxix, p. 72.
- †; *Platycrinus pileatus*, Goldf., abnormal; REED, Geol. Mag. (iii) ix, p. 548. *P. diadema*, *megastylus*, McCoy, *P. ? pecten*, Salter, *P.*

- vesiculosus*, McCoy; Woods, Cat. Type Foss. p. 41. *P. sp.*, Carboniferous, New S. Wales; ETHERIDGE, Pal. Mem. N.S.W. v, p. 131.
- †; *Poteriocrinus*?, Carboniferous, New S. Wales; ETHERIDGE, Pal. Mem. N.S.W. v, p. 81. *P. cressimanus*, McCoy; Woods, Cat. Type Foss. p. 42. *P. ? sp.*, Ordovician, Piedmont, Virginia; DARTON, Am. J. Sci. xlv, p. 52. *P. excavatus*, McCoy; see *Hydreionocrinus mccoynus*. *P. nuciformis*, McCoy; see *Oromyocrinus*. *P. longidactylus*; see *Scaphiocrinus*.
- † *Reteocrinidae*; EHLERT, Bull. Soc. Géol. (3) xix, pp. 839, et seq.
- † *Raphanocrinus*; EHLERT, Bull. Soc. Géol. (3) xix, p. 840.
- † *Rhodocrinidae*; EHLERT, Bull. Soc. Géol. (3) xix, p. 839.
- † *Scaphiocrinus longidactylus*, Austin; BATHER, Ann. N. H. (6) ix, p. 203.
- † *Schizocrinus*, ? sp., Ordovician, Piedmont, Virginia; DARTON, Am. J. Sci. xlv, p. 52.
- † *Solanocrinus beaugrandi*, Lor., Kimmeridgian, Boulonnais; RIGAUX, p. 69.
- † *Sphaerocrinus* discussed; BATHER, Ann. N. H. (6) ix, p. 207.
- † *Stephanocrinus osgoodensis*, S. A. Mill.; BEACHLER, Am. Geol. ix, p. 408.
- † *Symbathocrinus*, Carboniferous, New S. Wales; ETHERIDGE, Pal. Mem. N.S.W. v, p. 81.
- †; *Tazocrinus nanus*, Salter, ? *orbignii*, McCoy, *tuberculatus*, Miller, ? *granulatus*, Salter; Woods, Cat. Type Foss. p. 42. *T. longidactylus*; see *Scaphiocrinus*. *T. marmoratus*, Salter; see *T. tuberculatus*.
- †; *Torynocrinus canon*, Seeley; Woods, Cat. Type Foss. p. 43. *T. variolarius*, Seeley; see *Cyclocrinus*.
- † *Thenarocrinus*, referred to the Dendrocrinites; BATHER, Ann. N. H. (6) ix, p. 202.
- † *Tribrachiocrinus* re-described, p. 82; *T. clarkei*, McCoy, p. 90; *T. corrugatus*, Ratte, p. 95; ETHERIDGE, Pal. Mem. N.S.W. v.
- † *Tribrachiocrinus ornatus*, p. 94, *granulatus*, p. 97, Permo-Carboniferous, New S. Wales, ETHERIDGE, Pal. Mem. N.S.W. v, n. spp.
- † *Zophocrinus howardi*, S. A. Mill.; BEACHLER, Am. Geol. ix, p. 408.

## 6. CYSTIDEA.

- † *Agelacrinus pileus*?, Hall; MILLER & FABER, J. Cincinn. Soc. xv, p. 85.
- † *Atelecystis forbesi*, De Kon.; Woods, Cat. Type Foss. p. 42.
- † *Caryocystites davisi*, McCoy; see *Echinosphæra*.
- Cyclocystoides cincinnatiensis*, Ordovician, Cincinnati, MILLER & FABER, J. Cincinn. Soc. xv, p. 84, n. sp.
- † *C.* sp., MILLER & FABER, J. Cincinn. Soc. xv, p. 85.
- †; *Echinosphæra davisi*, McCoy; Woods, Cat. Type Foss. p. 43. *E. kingi*: undescribed species; NOETLING (38).



## XV. VERMES.

BY

FLORENCE BUCHANAN, B.Sc.

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### ARRANGEMENT OF RECORD.

A common List of Titles is given, pp. 1-30, and three papers quoted which refer to *Vermes* in general. The Record is then broken up into the following groups, each group being again subdivided into a Biological, a Faunistic, and a Systematic part :—

- I.—HEMICHORDATA, including BALANOGLOSSUS, CEPHALODISCUS, RHABDOPLEURA, pp. 30, 31.
- II.—ANNELIDA, including GEPHYREA, CHÆTOPODA, and HIRUDINEA, pp. 31-52.
- III.—PLATYHELMINTHES, including CESTODA, TREMATODA, NEMERTINEA, and TURBELLARIA, pp. 53-72.
- IV.—NEMATODA, ACANTHOCEPHALA, and CHÆTOGNATHA, pp. 73-82.
- V.—ROTIFERA, pp. 82-88.
- VI.—MESOZOA, p. 88.

### TITLES.\*

- ANDERSON, H. H., & SHEPARD, J. Notes on Victorian Rotifers. P. R. Soc. Vict. (n.s.) iv, pp. 69-80, pls. xii & xiii. Abstr. in J. R. Micr. Soc. 1893, p. 48.
- ANDREWS, E. A. (1) Notes on the Fauna of Jamaica. Johns Hopk. Univ. Circ. xi, pp. 72-75, *Vermes*, p. 75.
- Very brief, not giving the names of species.
- . (2) Bifurcated Annelids. Am. Nat. xxvi, pp. 725-733, pl. xxi.
- . (2) On the Eyes of Polychæstous Annelids. J. Morph. vii, No. 2, pp. 169-222, pls. ix-xi.

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\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.



APÁTHY, S. (1) Kritische Bemerkungen über das Frenzel'sche Mesozoon *Salinella*. Biol. Centralbl. xii, pp. 108-123. Transl. in An N. H. ix, pp. 465-482.

— (2) Contractile und leitende Primitivfibrillen. MT. z. St. Neap. x, pp. 355-375, pls. xxv & xxvi, 1 woodcut.  
Studies in Leeches.

APPELLÖF, A. Om Bergensfjordenes faunistiske præg. Bergens M. Aarsber. 1891 (2) pp. 4-14.

APSTEIN, C. *Callizona angelina* (Kbg.), Apstein. Festschr. zum 70. Geburtstag Rudolf Leuckarts. Leipsig (Engelmann): 1892 pp. 44-47, pl. v.

\*ATKINSON, C. F. Note on a Nematode Leaf-Disease. Ins. Life, (1891), p. 31.

BALDWIN SPENCER. [See SPENCER, W. B.]

BEDDARD, F. E. (1) Note upon the Encystment of *Aelosoma*. An N. H. (6) ix, pp. 12-19, 2 woodcuts.

— (2) The Earthworms of the Vienna Museum. T. c. pp. 113-13 pl. vii.

Schmarda's specimens properly described and most of them renamed

— (3) On a new genus of *Oligochæta*, comprising five new species provisionally belonging to the Family *Ocnerodrilidæ*. Op. cit. (6) pp. 74-97, pls. vi & vii.

— (4) Preliminary notice of a new Branchiate Oligochæt. Natur. xlv, pp. 109 & 110.

— (5) A new Branchiate Oligochæt (*Branchiura sowerbyi*). Q. J. Micr. Sci. xxxiii, pp. 325-341, pl. xix.

— (6) Researches into the Embryology of the Oligochæts. No. On certain points in the development of *Acanthodrilus multiporus*. T. c. pp. 497-540, pls. xxx & xxxi. Abstr. in J. R. Micr. Soc. 1892 p. 611.

— (7) Two new Genera and some new Species of Earthworm. Q. J. Micr. Sci. xxxiv, pp. 243-278.

— (8) On the Earthworms collected in Algeria and Tunisia by Dr. Anderson. P. Z. S. 1892, pp. 28-37.

— (9) On some Species of the Genus *Perichæta* (s. str.). T. c. pp. 153-172, pls. ix & x.

— (10) On some aquatic Oligochætous Worms. T. c. pp. 349-362 2 woodcuts.

— (11) On some Perichætids from Japan. Zool. Jahrb. Abth. Syst. vi, pp. 755-766, pl. xxxii.

- BELL, F. J. Remarks upon the habitat of *Bipalium kewense*. P. Z. S. 1892, p. 258.
- BENHAM, W. B. (1) Descriptions of three new Species of Earthworms. T. c. pp. 136-152, pls. vii & viii.
- . (2) Notes on two Acanthodriloid Earthworms from New Zealand. Q. J. Micr. Sci. xxxiii, pp. 289-312, pls. xv & xvi.
- . (3) A new English Genus of Aquatic *Oligochaeta* (*Sparganophilus*) belonging to the family *Rhinodrilidae*. Op. cit. xxxiv, pp. 155-179, pls. xix & xx. Abstr. in J. R. Micr. Soc. 1893, p. 39.
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- A species of *Tetrastemma*.
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- Supporting HURST, criticising FRIEND (4).
- BERANECK, —. L'embryogenie de l'œil des Alciopides. Arch. Sci. Nat. xxviii, pp. 554 & 555.
- °BERANGER-FERAND, —. (1) Sur l'augmentation de fréquence du Tænia en France depuis un demi-siècle. Bull. de l'Acad. de méd. (3) xxvii, p. 112, and in Sémin. Médic, 1892, No. 5.
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## VERMES IN GENERAL.

Theory of mesoderm formation and metamerism; CHOLODKOWSKY.—Discussion of *Vermes*, and especially of the different names given to the Nephridia in the different groups; COSMOVICI (3) and v. KENNEL (2).

### I.—HEMIOHORDATA.

[*Balanoglossus*, *Cephalodiscus*, *Rhabdopleura*.]

#### A.—BIOLOGICAL.

*Balanoglossus*, as one of the generalised types in Zoology; RITTER (1). Morphology of *Rhabdopleura*, showing its relations to the *Hemichordata*; FOWLER, G. H.

Comparison of nerve-cord of *Balanoglossus* with that of *Amphioxus*; SKIMKEVICH.

Method of obtaining larvae of *Balanoglossus* (improvement on Bateson's); MORGAN (2).

## B.—FAUNISTIC.

Solovetzki : *B. merejkowskii*; KNIPOVICH.

United States : *Balanoglossus kowalewskii* in both Wood's Holl and Newport ; *Tornaria* of New England, ? = that of *B. krohnii*, Bourne, of the Mediterranean ; MORGAN (1).

Jamaica : a new species of *Balanoglossus*, ANDREWS (1), STUART.

Nightingale I. : *Rhabdopleura normanni*, Allm. ; FOWLER, G. H.

## C.—SYSTEMATIC.

*Balanoglossus claviger* and *minutus*, figured ; SKIMKEVICH. *B. krohnii* : its *Tornaria* in New England? MORGAN. *B. kowalewskii* in New England ; MORGAN (1). *B. merejkowskii* compared with *Amphioxus* ; SKIMKEVICH ;—from Solovetzki ; KNIPOVICH, pp. 24, 35, & 40. *B.* n. sp. (or n. spp.), from Jamaica ; ANDREWS (1), STUART.

*Rhabdopleura normanni*, Allm. : morphology of ; FOWLER, G. H.

## II.—ANNELIDA.

[Including *Gephyrea*, *Chaetopoda*, and *Hirudinea*.]

## A.—BIOLOGICAL.

## 1. GENERAL.

On the relation of Arthropods (*Tracheata*) to Annelids ; ZOGRAF (2) [see also p. 54 of Record, under *Platyhelminthes* : Excretory system ; РИЕНН].

Anatomy and histology of *Branchiura sowerbyi*, a new Branchiate Oligochaet ; BEDDARD (5) : of *Onchuresoma steenstrupi* ; SHIPLEY : of *Sparganophilus tamesis*, n. g. & sp., of aquatic Oligochaeta ; BENHAM (3) : of Australian *Chlorhaemidæ* ; HASWELL (1) : of *Alciopidæ* of Messina ; HERING : of two Acanthodriloid Earthworms from New Zealand ; BENHAM (2) : of the *Tubificidæ* ; RANDOLPH.

Anatomy of *Amphichæta sannio*, n. g. & sp. of Oligochaet ; KALLSTENIUS : of Victorian Earthworms ; SPENCER (3) : of Russian and Siberian Earthworms ; KULAGIN.

## 2. EPIDERMIS.

GOODRICH describes an Oligochaet, with a dense covering of fine hairs or bristles all over. LENHOSSÉK (2) shows by Golgi's methods that the blood vessels penetrate right into the epidermis of the Earthworm, not exclusively in the chitellar region. LENHOSSÉK (1) describes the terminations of sensory nerves in the Earthworms. JOURDAIN (1) describes them in Polychæts.

## 3. MUSCULAR SYSTEM.

Absence of spindle muscle, and presence of only one retractor muscle in a Sipunculid; SHIPLEY.

What was formerly taken for jaw muscles in the *Hirudinea* (*Gnathobdellidae*) shown to be ducts of salivary glands; LEUCKART (2).

## 4. DIGESTIVE SYSTEM.

Alimentary canal of *Hirudo* fully described and figured; HENKING.

LEUCKART (2) describes fully the salivary glands of the *Hirudinea* with jaws, in which alone they are present. The duct of each gland (and of these there are about a hundred in *Hirudo*, a dozen in *Aulastoma*) divides, on reaching the root of the tooth, into two halves, which then meet again to open by a short narrow duct in the tooth to the exterior. He concludes that in *Aulastoma* the juice secreted must have some other function than that of preventing coagulation. He shows that besides the salivary glands there are other glands—maxillary glands and unicellular glands—histologically, chemically, and optically distinct from them, but also opening into the mouth.

BLANCHARD (6) proposes the name "pseudognaths" for the jaws of Nephelids, to distinguish them from those of other *Gnathobdellidae*.

The cells lining the intestine of *Lumbricus* and their action are described very fully by GREENWOOD. Around and almost covering in the gland-cells, whose secretion serves for the digestion of the food, are other cells ciliated towards the lumen of the intestine, and serving for the absorption of food. Whilst fat is being digested, however, the cilia disappear, and a striated border to the cell appears in their place. The ciliated cells are more evident in the walls of the typhlosole than of the intestine proper.

In a new genus of Oligochaet, allied to *Chatogaster*, it is shown that the lumen of the anterior part of the alimentary canal of the asexually-produced bud, is formed by the fusion of two secondary lateral lumina, on either side of the old alimentary canal; KALLSTENIUS.

## 5. COELOM.

JOURDAIN (3) shows that the coelom is lined by a ciliated epithelium in Sipunculids, and refers to instances of the same thing in other animals, vertebrate and invertebrate, concluding therefrom that the word "endothelium," in anatomy, should be done away with. He is criticized by MALASSEZ.

## 6. CONNECTIVE TISSUE.

Yellow bodies in the connective tissue elements of Sipunculids shown by JOURDAIN (2), to be due to granules of a glycogenous matter, serving as reserve food material.

## 7. CIRCULATORY SYSTEM.

Circulation of *Lumbricus*; GRIFFITHS (1); and LENIHOSSEK (2), where it is shown that blood vessels penetrate right into the epidermis.

Chemical constitution of the blood in Gephyreans, Chætopoda, and Leeches; GRIFFITHS (2). Hermérythrine, a new iron-containing respiratory pigment in the blood of Sipunculids; GRIFFITHS (3).

Vascular system of *Chlorhaemida*; HASWELL (1).

Absence of vascular system in a Sipunculid; SHIPLEY.

## 8. RESPIRATORY SYSTEM.

SHIPLEY maintains that the intestine is the chief respiratory organ in the unarmed Gephyreans, and that the vascular system serves merely to extend the tentacles.

BEDDARD (4, 5) describes a new Oligochæt with about fifty pairs of branchiæ, one pair per segment, at its hinder end. These are simple processes, situated on the middle dorsal and ventral line, not ciliated; the coelom extends into them, and blood vessels lie just beneath the epidermis on each side of each, breaking up into capillaries in the integument.

## 9. EXCRETORY SYSTEM.

Development of nephridia in *Megascolides*; VEJDOWSKY (2): in *Acanthodrilus multiporus*, BEDDARD (6). In *Megascolides* functional nephrostomes appear never to be developed at all except in the posterior segments, where the meganephridia afterwards appear; anteriorly the rudiments of them soon disappear and micronephridia are developed straight away, with intercellular efferent ducts, and not at first connected by longitudinal ducts. In *Acanthodrilus* all the nephridia in the youngest embryos have functional nephrostomes, which all become rudimentary later except for those in segments xi-xiv; they are formed as meganephridia; secondary openings to the exterior are formed later, when the micronephric condition is assumed; the second pair, and then one or two other pairs, become connected with the first to form the "mucous gland;" opening into the stomodæum; the anal nephridia are formed late, and open into the mesenteron, not into the proctodæum; the gonaducts are developed from the nephridial funnels and a small portion of the succeeding tube.

KALLSTENIUS shows that in a new genus of fresh-water Oligochæt the nephridia are fused with the ventral vessel throughout their course.

BOLSUS (2) describes the nephridia of fresh-water Leeches, showing that in *Nepheleis*, *Clepsine*, and *Hemiclepsis*, there are to each nephridium three distinct unicellular canals, each arising from a separate group of branching intracellular tubules, and uniting with one another only just before opening to the exterior. In *Hirudo medicinalis* he proves the existence of multicellular glands opening into the intracellular canals. He gives a review of the work hitherto done on the nephridia of Leeches.



He also shows (1) that the so-called ciliated "funnels" have no connection with the nephridia.

Only a single nephridium in a Sipunculid ; SHIPLEY.

Excretory organ of *Copperingia* (n. g. of *Chlorhamidae*) ; HASWELL (1)

Individual variation in the position of the nephridiopores in Earth worms ; HUBRECHT—the conclusion being arrived at that the meganephric arrangement of nephridia is probably the more primitive : in Leeches ; BLANCHARD (6) and (3, III).

## 10. NERVOUS SYSTEM.

Several very important papers on the Nervous System of Annelids and Nematodes [see Nematode part of Record] throw light on the histology of nervous systems in general. V. LENHOSSEK (1) and RETZIUS agree that in *Lumbricus* the sensory nerve-cells do not lie in the nerve-cord nor in special ganglia, but in the epidermis ; from them fibres go to the nerve-cord dividing there into an ascending and a descending branch, which run on the same side of the body as the nerve enters—through the length of three ganglia according to V. LENHOSSEK, not quite as far as the next ganglion according to RETZIUS—and so end in the "Punksubstanz," not uniting with ganglion cells. RETZIUS shows, further, that the motor nerve-cells lie in the ganglia of the ventral cord and send processes which branch into the "Punksubstanz" as well as nerves to the periphery, which there branch to the muscles ; these nerves sometimes arise from ganglion cells of the same side, sometimes from those of the opposite side of the body, so that there is a certain amount of decussation ; in each ganglion there is one multipolar cell of unknown function. CERFONTAINE maintains the nervous nature of the giant-fibres in *Lumbricus* ; they are, however, very special nerve fibres resulting from the union of the prolongations of several axis cylinders coming from distinct cells ; they give off branches in each ganglion, which connect them either with other elements of the nerve-cord, or with the periphery ; the median giant-fibre develops from in front backwards, and the lateral ones from behind forwards, the currents in them are, therefore, going in opposite directions ; their function, he concludes, is to connect lengthwise the different parts of the nervous system, and to allow for the simultaneous muscular contraction in the whole extent of the body. APÁTHY (2), working at Leeches, regards each nerve as a bundle of primitive fibrils surrounding some central protoplasm ; these fibrils are supposed to carry the nerve impulse. He is criticized by ROLHE (1, I).

WAWRZIK discusses the supporting structures of the Nervous System in Chaetopods.

## 11. SENSE ORGANS.

JOURDAIN (1) describes sensory nerve-terminations in several Polychaets, situated generally on the appendages, but sometimes on the body-

wall where there are no appendages, consisting sometimes of cells of the Vertebrate olfactory type, sometimes ciliated, and sometimes much like the ordinary epithelial cells.

Eyes: The derivation of the Vertebrate from the Annelid eye; V. KENNEL (1). A Sipunculid, with pigment spots or eyes; SHIPLEY. Eyes of *Polychæta*; ANDREWS (3): the structure of the adult eyes of 26 species is described and, for most of them, figured; the development of the eye is given in 5 species; it is found that each eye is a pigmented cup, formed of one layer of retina cells all essentially alike, and consisting each of a peripheral body containing pigment and a central clear rod; some of the cells are much attenuated; the lens is continuous with the cuticle, sometimes also with the retinal cells, and is either secreted by the retinal cells, or formed from the fused central ends of them; the connection with the epidermis persists (except in the *Alciopidae*, where there the development of the eye is exceptional), the eye being formed not as an invagination, but by the elongation and pigmentation of a few epidermis cells, whose central ends become the rods by the withdrawal of the pigment to the opposite end. BERANECK describes the development of the eye in the *Alciopidae*, showing that it is built on quite a different plan to the Arthropod eye. The eyes of certain of the *Chlorhaemidae* are described by HASWELL (1): in one genus they are on special processes of the prostomium in the bases of which are optic ganglia which are outgrowths of the brain. MAIER describes the minute structure of the eyes in the *Hirudinæ*, showing that in *Hirudo* and *Aulastomum*, while the main branch of the nerve enters the eye posteriorly, there is also a small one entering it anteriorly and ventrally; while in *Nepheleis*, *Clepsine*, and *Piscicola* there is only the one branch entering the eye in front. BLANCHARD (6) mentions asymmetry of the eyes as occurring often in *Nepheleis*, but seldom in *Hirudo*.

Auditory Organs: EHLERS (1) describes very fully the structure of the so-called "auditory organ" in the different species of *Arenicola*: in *A. clapedii* there is only an open groove, with no otoliths or neuroepithelium; in *A. marina* the otocyst, though deep-lying, is still connected with the exterior by a narrow canal, and contains foreign particles; in *A. grubei* and *A. antillensis* the sacs are quite closed and the otoliths are intrinsic formations; in no species are there hairs or rods to the cells forming the sac, and the author suggests that they more probably serve as organs of equilibration than as auditory organs; he shows that they have nothing to do with the "Nackenorgane," nor do they correspond to the setal sacs of the parapodia; they may, however, represent modified cirri.

Embryonic sense organs: BEDDARD (6) describes in *Acanthodrilus* an unpaired sense organ in the young embryo, consisting of a few large cells on one side of the stomodæal aperture; in the advanced embryo he also finds peculiar cells in the epidermis, which he thinks form a sense organ.

## 12. GENITAL SYSTEM.

BEDDARD (6) shows that there are originally 4 pairs of gonads with their ducts developed in *Acanthodrilus* in segments x-xiii; and that the one in the 12th segment afterwards degenerates. WOODWARD describes an abnormal *Allolobophora* with 7 pairs of ovaries. BLANCHARD (4) describes a Leech with two pores on the female segment (xi), one between the 32nd and 33rd, the other between the 35th and 36th annuli; of these, sometimes the one, sometimes the other, is the larger; their significance is not shown. ROSA (1) describes an Earthworm (*Paradrilus rosae*, Mich.) in which the spermathecae are in communication with the intestine, as well as with the exterior, as in the *Enchytraëla*. GOODRICH describes a Tubificid, in which the spermathecae open by a median pore in the 10th segment, and in which the sperm-ducts also open by a median atrium.

## 13. REPRODUCTION.

Fertilization of *Clepsine*: MÜLLER. Hybridism in Earthworms; BENHAM (2), FRIEND (8), BEDDARD (11). Asexual reproduction in *Amphichæta*, n. g. of Oligochaet, KALLSTENIUS. Encystment: [see under "Habits," &c]. CHUN suggests that the process to which he gives the name of Dissogony, the ripening of one individual in two different stages of its development, may take place in *Nereis*. PROUHO discusses the different kinds of individuals, with regard to sex, in the Mediterranean *Myosotomas*, showing that in one species (*M. alatum*) the sexes are distinct in the young, the males being much smaller than the females, but that then the males develop ovaries, thus becoming hermaphrodite.

## 14. DEVELOPMENT.

The recent researches into the germ-layers of Annelids (*Nereis*, *Lopodorkhynchus*, and *Clepsine*), as affecting the interpretation of the germ-layers of Vertebrates; REPIACHOFF. The development of *Nereis* is very fully and carefully worked out by WILSON, the whole history of each cell of the segmentation sphere being given; it is shown that, owing to the large size of the left posterior macromere, the cells of the segmentation sphere have a spiral instead of radial arrangement; bilateral symmetry is only assumed later, after the formation of the mesoblast; the question of bilateral symmetry in the cleavage of other eggs is discussed, and it is concluded that in all cases it results from the anticipation of the bilateral symmetry of the adult; in an appendix the author mentions several other Polychæts which he has examined, in which he also found spiral segmentation of the ovum, continuing even to a later period.

Development of *Arenicola*; EHLERS (2): The young of *A. marina* is pelagic though not found at the surface; its body consists of 2 regions, the one comprising prostomium, buccal segment, and 20 succeeding double segments, the other numerous, narrow and non-setigerous segments; there

are no branchiæ. Points in development of *Acanthodrilus*; BEDDARD (6). Comment on Apáthy's description of the development of *Hirudinea* [see Zool. Rec. 1891, *Vermes*, APÁTHY (2)]; BERGH: provisional larval muscles of *Gnathobdellidæ*, and larval skin drawn attention to; teloblasts said to have been not clearly interpreted by APÁTHY.

## 15. METAMERISM AND VARIATIONS THEREIN; ALSO OTHER VARIATIONS.

WHITMAN contributes an important paper on the metamerism of Leeches. He concludes that the head consists merely of a certain number of true metameres (1-6), and these have the same ganglia as the other metameres, only somewhat displaced; also that the typical number of annuli per segment is 3, so that when fewer or more are found either suppression or division of one or more annulus must have taken place. The trunk is formed by two germ bands, which are at first dorsal, but grow round the yolk mass to meet in the mid-ventral line from in front backwards, and segmentation then begins on the ventral surface; segmentation of the head begins in front of the bands and on the dorsal surface only, after the segmentation of the germ-bands on the ventral surface but before their segmentation on the dorsal surface. The metameric sense organs and their nerve supply are very fully described and figured.

Variation in normal type of segmentation for *Trocheta*, owing to fusion of annuli; BLANCHARD (6). Variation in number of annuli in specimens of *Glossiphonia*, from same locality; BLANCHARD (3, IV).

Spiral Metamerism: both CORI and MORGAN (3) have independently shown in Chaetopods the frequency with which, in certain genera, normal circular segmentation is replaced by spiral segmentation for a greater or less number of segments. SAINT JOSEPH also shows that a great deal of asymmetry prevails in the *Subellidæ*, and it would seem that his cases may also be treated as cases of spiral segmentation. BLANCHARD (6) mentions the occurrence of the same thing in Leeches.

Other cases of asymmetry: in male genital pore of Oligochaets; FRIEND, (14) p. 108, COLLIN, A. (1): in Clitellum; BEDDARD (11): in eyes of Leeches; BLANCHARD (3, v) and (6).

Bifurcation: recorded instances in Chaetopods collected; ANDREWS (2). Tail double, the two halves meeting at the posterior extremity, and separated from one another anteriorly, in an Oligochaet; FRIEND, (14) pp. 108 & 109. Head double, the one half, consisting of two segments and prostomium only, moving like a feeler to the other; FRIEND, (14) p. 161.

Symmetrical variations in position of nephridial and genital pores in Leeches; BLANCHARD (3, III) and (6).

Variations in number: an *Allolobophora* with seven pairs of ovaries though with only the usual one pair of oviducts; WOODWARD.

An abnormal larva of *Polygordius*; RITTER (2). A larva is described

which behaves very much in the way of a *Phoronis* larva, a bud being given off behind the head, into which the alimentary canal extends, opening to the exterior at its extremity, for a certain length of time. How the original axis becomes the adult axis, and the bud disappears, was not observed, though it is assumed that this happens.

An albino *Perichata monilicystis*; MICHAELSEN (1).

## 16. SYNONYMY, CLASSIFICATION, &C.

Synonymy of certain Polychæts, including several of Schmarda's species; MICHAELSEN (4): of some northern forms; v. MARENZELLER (1). Schmarda's species of Oligochæts renamed on examination of the type specimens; BEDDARD (2).

Classification of Annelids; HATSCHKE.

Value of colours and markings of Leeches in forming new varieties; NUSBAUM (2).

[See also Systematic part of Record.]

## 17. HABITS, PROPERTIES, AND STRAY NOTES.

Temporary encystment of *Æolosoma*; BEDDARD (1), VEJDOWSKY (1). Vejdowsky compares with this the formation of special burrows by certain *Lumbricidæ*, and ascribes both sets of phenomena to the rest required after a period of asexual reproductive activity. An Annelid (*Leucodora coeca*) living in a sponge (*Microciona*); HORNELL (2). Annelid with tube coiled like the frond of a fern [Zool. Rec. 1891, *Vermes*, p. 25], shown to be *Sabellu saxicava*; WATSON. Polychæts parasitic on Echinoderms; MATZDORF (3), and CUÉNOT. Myzostomas parasitic on or in *Antedon phalangium*; PROUHO. Horse Leech in nasal mucous membrane of man; CONDORELLI (4). Leeches and Earthworms swallowed alive by the Bittern; LIEBE. *Clepsine tessellata* in posterior nares of Swan; COLLIN, A. (2). The blood of Leeches as a medium for the cultivation of *Hæmatozoa*; LABBÉ. Earthworms as fertilizers of the soil; LOZ: as the carriers of the tubercle bacillus; LORTET & DESPEIGNES. A protozoon (*Rhabdostyla arenicolæ*) parasitic on the branchiæ of *Arenicola marina*; MATZDORF (2). On the conditions of existence of pelagic organisms, including Polychæts and *Sagitta*; KOEHLER. Phosphorescence in Earthworms; HILLIGER, GIARD. The dissemination of Leeches by Palmipeds; GUERNE (1) and BLANCHARD (2).

## 18. METHODS.

For nephridia of Leeches; BOLSIUS (2). For eyes of Leeches; MAIER, p. 559.

For preserving Oligochæts and Leeches, paralyzing with magnesium chloride and killing with chromic acid recommended; TULLBERG. For preserving Leeches and Polychæts; CUNNINGHAM. For rearing Polychæt larvæ; BLES.

## B.—FAUNISTIC.

## LAND AND FRESHWATER FORMS.

Note on distribution of Oligochæts and Leeches in general ; STOLL.

a. *Palæarctic Region.*

British Isles : British Tree- and Earthworms, 6 species of *Allolobophora*, 5 of *Lumbricus* recognized ; FRIEND (2). New British Earthworms and summary of old ones, 21 species recognized ; FRIEND (4) : criticized by HURST & BENHAM (6) : *Lumbricus eiseni* in England ; FRIEND (3). Earthworms of Yorkshire and North Britain ; FRIEND (11, 12) : of Northamptonshire ; FRIEND (6) : of Essex ; FRIEND (1) : of Middlesex ; FRIEND (7) : of Sussex ; FRIEND (10) : of Kent ; FRIEND (5). A new species of Earthworm from Bangor ; FRIEND (9) : from Ireland ; FRIEND (13). *Sparganophilus*, n. g. of *Oligochæt* in the Thames ; BENHAM (3). *Vermiculus*, n. g. of *Oligochæt*, brackish water, Weymouth ; GOODRICH.

Western Europe : distribution of *Photodrilus phosphoreus* in ; MATZDORF (1) and GIARD. *Trochata subviridis* confined to Western Europe ; BLANCHARD (6).

France : Depts. Vosges and Meurthe as two new stations for *Phreoryctes menkeanus*, Hffmst. ; BRUNOTTE.

Germany.—Mecklenburg Earthworms ; MICHAELSEN (2). Earthworms in the neighbourhood of Berlin (3 species *Lumbricus*, 8 *Allolobophora*, 1 *Criodrilus*, 1 *Allurus*) ; COLLIN, A. (1). Altenar: new genus of *Enchytraëda* found under moss, *Bryodrilus ehlersi* ; UDE. Saxony : *Nephelis atomaria*, var. *meyeri*, n. var. ; BLANCHARD (3, III).

Austria.—Bohemia : Leeches and Chætopods ; KAFKA, FRITSCH & VÁVRA. S. Austria : *Xerobdella lecomtei* in the mountainous regions of ; BLANCHARD (4).

Poland : Leeches and Earthworms of ; NUSBAUM (2). The colours of the Leeches are shown to vary constantly with the locality, and several new varieties are described.

Finnland : 2 Oligochæts ; LEVANDER (2).

Russia and Siberia : Earthworms of ; KULAGIN.

China.—Shan-tong : no Earthworms ever seen there ; FAUVEL. Amoy : *Perichæta aspergillum*, Ferrier ; ROSA (1). Foo-chow : *P. sinensis*, n. sp., BEDDARD (9).

Japan : 4 species of *Perichætida* of which 3 new ; BEDDARD (11). Another new species of *Perichæta* and *P. sieboldii* ; ROSA (1). 3 new species of *Perichæta* and 1 new species of *Moniligaster* ; MICHAELSEN (1).

Liguria : *Trochata subviridis* recorded in ; BLANCHARD (6).

Sardinia : 1 Leech (*Hæmopsis vorax*) and 2 Oligochæts ; MARCIALIS : *Microcolez modestus* ; ROSA (1). Sicily : *Hormogasta redii* ; ROSA (5).

Algeria and Tunis : *Microcolez algeriensis*, n. sp., and *Allolobophora*

*complanatus*; BEDDARD (8). Tunis: *Allolobophora festæ*, n. sp., 1 (5). Tripoli and Egypt: *Allolobophora trapezoides*, Dugés; ROSA (5). Madeira: *Microscolex poultoni*, n. sp., BEDDARD (8). Azores: *Perichæta indica*; MICHAELSEN (1).

### b. Ethiopian Region.

W. Africa: 4 new species of a new genus, *Gordiodrilus*, of the fa *Oenerodrilidæ*; BEDDARD (3). Togo Land: 5 new species of *Benha* 1 of *Eudrilus*; MICHAELSEN (1). Valley of Niger: made fertile *Siphonogaster*; LOZ. Fernando Po: *Paradrilus rosæ*, Mich.; ROSA Central Africa.—Near Victoria Nyanza: 1 new species of *Benha* 2 of *Pygmaodrillus*, 2 of *Siphonogaster*; MICHAELSEN (2).

S. Africa.—Cape Colony: *Microchæta belli*, n. sp., BENHAM (1) *rappii*, Bed., ROSA (1); *Allolobophora trapezoides*, ROSA (1).

Natal: *Microchæta papillata*, n. sp., BENHAM (1).

Madagascar: *Kynotus michaelsonii*, n. sp., ROSA (4); *K. kelleri*, n. MICHAELSEN (1).

Mauritius: *Perichæta mauritiana*, n. sp., BEDDARD (9).

Mahé Island: *Perichæta pentacystis*, n. sp., ROSA (1).

### c. Oriental Region.

Ceylon: *Megascolex templetonianus*, n. sp., ROSA (7); *Typhæus la* ROSA, ROSA (1); *Perichæta taprobana*, n. sp., BEDDARD (9).

Burmah and neighbouring Region: List of Oligochæta, including 4 species of *Perichæta*, 1 of *Perionyx*, of which descriptions are giv ROSA (2). Bangkok: *Perionyx excavatus*; ROSA (1). Malacca: a spe of *Urochæta*; ROSA (1).

Singapore: *Perichæta morrisi* (?) notes on; BEDDARD (9). *Megasc armatus*, Bed.; ROSA (1).

Nicobar: *Lumbricus rubellus*, Hffm., and *Allolobophora fatida*, S ROSA (1).

Penang: *Perichæta morrisi*, n. sp., BEDDARD (9).

Sumatra: *Desmogaster*, HORST; *Perichæta longa*, n. sp., MICHAELSEN

Engano: absence of *Perionyx excavatus* and *Megascolex armatus*, presence of *Perichætidæ* much like the Indian ones show Indian chara of fauna; 3 new species and 1 new subspecies of *Perichæta*, and 1 spe of *Urochæta* (*U. corethrura*, Müll.) described; ROSA (3).

Banka: *Perichæta martensi*, n. sp., MICHAELSEN (1).

Java and Borneo: *Perichæta racemosa*, n. sp., ROSA (1). Java: *operculata*, n. sp., ROSA (1); *P. udekemi*, Gr., MICHAELSEN (1). Borneo: *P. mandhorensis* and *Megascolex pictus*, n. spp., MICHAELSEN (1).

Malay Archipelago generally: 21 species of Earthworms, amongst wl are 8 new species, and 2 new genera (*Glyphidrilus* and *Annadrilus*, belk ing to the fam. *Geoscolecidae*), gen. *Benhamia*, recorded here for the time; HORST.

Philippine Islands.—Luzon : *Perichæta pulchra*, n. sp., *Pleinogaster jagori*, n. g. & sp.; Samar, *Megascolex iris* and *margaritaceus*, n. spp., *Pleinogaster samariensis*, n. g. & sp., MICHAELSEN (1). Cebù : *Perichæta philippina*, n. sp., ROSA (1).

#### d. Australian Region.

New Guinea : *Perichæta neoguinensis*, n. sp., MICHAELSEN (1).

Arù Island : *Microchaeta benhami*, n. sp., ROSA (1).

Australia : *Hæmadipsa* in, as well as in Old World ; STOLL. Queensland : *Perichæta gymptiana*, n. sp., and *Cryptodrilus purpureus* ; SPENCER (2). N. S. Wales : Sydney, *Didymogaster sylvaticus* ; ROSA (1). Victoria : Earthworms of ; SPENCER (3), comprising 11 new species of *Cryptodrilus* (5 from Gippsland), 10 new species and 1 new variety of *Megascolides* (2 of them and the variety from Gippsland), and 2 known species of *Megascolides*.

New Zealand : *Neodrilus monocystis*, Bed., and *Plagiochæta punctata*, n. g. & sp. ; BENHAM (2).

Tahiti : *Perichæta grubei* and *novaræ*, n. spp. (for *P. taitensis*), ROSA (1).

Marquesas : *Perichæta albida*, n. sp., MICHAELSEN (1). Hawai : *Perichæta hawayana*, n. sp., and *Allolobophora subrubicunda*, Eisen ; ROSA (1).

#### e. Neotropical Region.

Argentine Republic : *Microcolex dubius* ; ROSA (1).

Chili : *Glossiphonia tessellata*, and discussion as to how it got there ; BLANCHARD (2). *Acanthodrilus platurus*, n. sp., MICHAELSEN (1). Chiloe Island : *Acanthodrilus pictus* ?, Mich. ; ROSA (1). *A. platurus*, n. sp., MICHAELSEN (1). Valparaiso : "large phosphorescent Earthworm" ; HILLIGER.

Bolivia : Upper reaches (salt) of Pilcomayo R., *Kerria halophila*, n. g. & sp. of fam. *Cryptodrilidæ* ; BEDDARD (10).

Brazil : *Geoscolex maximus* ; ROSA (1). *Tykonus grandis*, n. g. & sp., *Pontodrilus arenæ*, F. Mull. ; MICHAELSEN (1). S. Brazil : *Cylicobdella* ; STOLL.

Venezuela : *Eudrilus roseus*, n. sp., *Benhamia bolavi*, Mich., *Anteus*, 3 n. spp. ; MICHAELSEN (1).

Ecuador : on Cayambe, at height of 14,000 feet, *Rhinodrilus ecuadorensis*, n. sp. ; BENHAM (4).

Guatemala : *Cylicobdella* ; STOLL.

Ciudad Durango : *Benhamia mexicana*, n. sp., ROSA (1).

Dominica : *Gordiodrilus dominicensis*, n. g. & sp., BEDDARD (3).

Barbados : *Perichæta barbadensis*, n. sp., BEDDARD (9).

Jamaica : peculiar Earthworm on trees at Moneague ; ANDREWS (1).

#### f. Nearctic Region.

Bermuda : *Perichæta bermudensis*, n. sp., BEDDARD (9).

Queen Charlotte's Island : *Plutellus perrieri*, n. sp., BENHAM (1).



## MARINE FORMS.

a. *Arctic Ocean.*

Off East Spitzbergen : Polychæts collected by Bremen Expedition, species, with notes on anatomical details of many of them, and with list of synonyms ; V. MARENZELLER (1).

White Sea.—Solovetzki : Polychæts (pp. 25–27), *A. priapulus* (pp. 28 & 40) ; KNIPOVICHKA.

b. *N. Atlantic Ocean.*

Norway.—N. W. Coast : *Onchnesoma steenstrupii*, n. sp., SHIPL. Bergenfjord : Polychæts and Gephyreans ; APPELLÖF.

Baltic Sea.—E. Baltic : 8 species of Polychæts, 2 Gephyrea ; KOJEVNIKOV.

North Sea.—St. Andrew's Bay : *Clymens ebiensis* ; MCINTOSH.

Irish Sea.—Liverpool Bay : 88 species of Polychæts, of which 11 are 3 others new to Britain, 2 new varieties ; correction of a previous error from the same locality by another author ; separation of species according to their vertical range into littoral, deep water, and indefinite forms, a table of the geographical and bathymetrical range of the local Polychæts ; HORNELL (1).

English Channel.—Off the Coast of Devonshire : *Stauropsis rubrorittatus*, *Dinophilus tenuatus* ; GARSTANG (1) : *Protodrilus leuckarti*. Plymouth ; BLES : Polychæts of Plymouth, 63 species, of which 5 are 2 ? forming new genera, 7 other species new to Britain ; BUCHANAN. Channel Islands : *Sabella saxicava* ; WATSON. Banyuls-sur-Mer : *Eugigantea*, 3 metres long, recorded ; LACAZE-DUTHIERS.

Bay of Biscay.—Coast of Loire Inf. : 1 Polychæt and 1 armed Gephyrean ; CAMUS. Santander : 6 species Polychæts and 1 *Phascolosoma* ; FUSSET.

Mediterranean.—Sardinia : 5 species Polychæts, 2 Gephyreans ; MICHALIS. Messina : anatomy of 7 new species of *Alciopidae* ; HERING.

Black Sea : 17 species of Polychæts, 1 new genus and 6 new species ; PÉRIASLAVZEFF.

Caribbean Sea.—Jamaica : Sipunculids rare ; Polychæts, no pelagic forms, *Amphinomidae* and *Sabellidae* common, but *Eunicidae* none ; ANDREWS (1).

c. *Indian Ocean.*

Zanzibar : 8 species of Gephyreans (3 new ones of *Thalassoma*) ; FISCHER. 1 species *Phymosoma* ; COLLIN, A. (3).

Red Sea : 3 Polychæts ; BOUTAN.

Ceylon : 14 species of Polychæts, including 1 new genus and 4 new species ; MICHAELSEN (4).

Indian Coast : a tubicolor annelid ; KESWELL.

d. *S. Pacific Ocean.*

The Australian species of *Branchellion* ; BLANCHARD (3, vi).

Torres Straits.—Darnley Isl. : *Coppingeria longisetosa*, n. g. & sp. of *Chlorhæmidæ* ; HASWELL (1).

Off Sydney : a second species of *Phoronis* (? = *P. psammophila*, found at Messina), and remarks on other species ; HASWELL (4, 1) : two new species of *Stylaroides* ; HASWELL (1).

New Zealand : new species of *Branchellion* occurring on *Raia nasuta* ; *Dujardinea*, from Port Chalmers ; PARKER.

S. America.—Off Callao : 2 Sipunculids, 1 n. sp. ; COLLIN, A. (3).

C.—SYSTEMATIC.

GENERAL.

HATCHEK proposes, in a preliminary paper, a new classification of Annelids, dividing them into the 4 Subclasses :—

1. *Archiannelida*, including the *Polygordiidae* and *Dinophilidae*.
2. *Chætopoda*, including the *Protochæta* (*Saccocirridæ*), *Polychæta*, and *Oligochæta*.
3. *Hirudinea*.
4. *Echiurida*.

With 2 supplementary groups : (5) the *Sipunculacea*, and (6) the *Chætognatha*. He gives a further classification of the two first sub-classes, deriving all Chætopods (and hence the *Hirudinea*) from the *Archiannelida*, through the *Protochæta* and *Spionida*. He gives separate tables of the relations between some of the different families of Errant Polychæts.

1. GEPHYRÆA (including PHORONIS).

A. PHORONIS.

BLOCHMANN (3) discusses the affinities of the *Brachiopoda*, concluding that they are most nearly related to *Phoronis*. *Phoronis australis*, living in wall of tube of *Cerianthus*, and *P. psammophila* ? in Port Jackson ; HASWELL (4, 1).

B. UNARMED GEPHYREANS.

*Aspidosiphon cumingi*, from Zanzibar, remarks on ; FISCHER.

*Cleosiphon aspergillum*, from Zanzibar, remarks on ; FISCHER.

*Dendrostomum perurianum*, n. sp., Callao, COLLIN, A. (3), anatomy.

*Onchnesoma steenstrupii*, n. sp., N. W. Coast of Norway, SHIPLEY, anatomy and histology. An *Onchnesoma* in the Bergenfjord ; APPELLÖF.

*Phascolosoma catherinae*, Fr. Müll., Callao, and *P. sanderi*, n. sp., locality ?, COLLIN, A. (3), descriptions.

*Phymosoma granulatum*, from Zanzibar, description ; COLLIN, A. (3).

*P. scolops*, from Zanzibar, description ; FISCHER.

*Priapulus caudatus*, from Solovetski ; KNIPOVICH.

*Sipunculus indicus*, Zanzibar, internal anatomy ; FISCHER : conclusions arrived at differ from those of SLUITER [see Zool. Rec. 1891, *Vermes*, p. 22]. *S. camanensis*, also from Zanzibar, description ; FISCHER.

Blood of *Sipunculus* ; GRIFFITHS (2) : yellow bodies ; JOURDAIN (2) : coelomic epithelium ; JOURDAIN (3).

### C. ARMED GEPHYREANS.

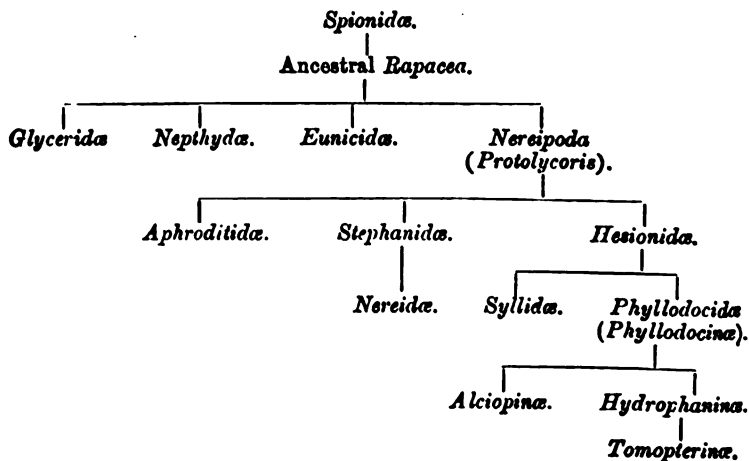
*Bonellia viridis*, from Sardinia ; MARCIALIS.

*Thalassema kokotoniense*, *stuhlmanni*, and *leptodermum*, n. spp., Zanzibar, FISCHER, anatomy. *T. neptuni*, in Bay of Biscay ; CAMUS.

## 2. CHÆTOPODA.

### A. POLYCHÆTA (including DINOPHILUS and PROTODEILUS).

[See above under "General."] HATSCHEK divides the *Polychæta* into the two main groups, *Cirrifera* (including suborders *Spiomorpha*, *Amphinomorpha*, and *Rapacia* with the *Mysostomida* as an appendix) and *Acirra* (including suborders *Drilomorpha*, with *Sternaspida* and *Ctenodrilida* as appendices, *Terebellomorpha*, and *Serpulimorpha*). He expresses in different trees some of the relations between the different families of *Rapacia* :—



- Aglaurides fulgida*, from Ceylon; MICHAELSEN (4).
- Alciopidae*, of Messina, full anatomy, histology, and synonymy of 7 species; HERING.
- Ampharete grubei*, recorded as British; HORNELL (1).
- Anaitis*: remarks on the genus and on the species, *A. lineata*, Clp., from which *A. maculata*, n. sp., is distinguished, although both were included by Claparède under the same name; PÉRIASLAVZEFF. *A. wahlbergi*, remarks on genus and species; v. MARENZELLER (1), p. 405.
- Aphrodite oblecta*, recorded as British; BUCHANAN. Blood of *Aphrodite*; GRIFFITHS (2).
- Apomatus globifer*, described and figured; v. MARENZELLER (1), p. 430.
- Arenicola marina*, development; EHLERS (2), HORNELL (1). Auditory organ of different species of *Arenicola*; EHLERS (1). A Protozoon parasitic on the branchiæ of *A. marina*; MATZDORF (2). Blood of *Arenicola*; GRIFFITHS (2).
- Aricia norwegica*, remarks on previous descriptions; APPELLÖF.
- Autolytus alexandri*, recorded as British; HORNELL (1), = *A. verrilli*, n. sp., for the (*Stephanosyllis ornata*) of Verrill, described and figured; v. MARENZELLER (1), pp. 416-420. *A. prismaticus*, and *A. sp.*? (♀ only), from Spitzbergen, descriptions; v. MARENZELLER (1), pp. 420 & 422. *A. rubovittatus*, Clp., Black Sea, remarks on; PÉRIASLAVZEFF.
- Brada inhabilis*, Spitzbergen, description and figure; v. MARENZELLER (1), p. 427.
- Callizona*: detailed description and classification of the genus and its five species, with special anatomy, histology, and figures of *C. angelina*, n. sp.; APSTEIN.
- Capitella multioculata*, n. sp., with 6 pairs of eyes, from Black Sea; PÉRIASLAVZEFF.
- Chaetopterus* tubes containing *Crystallogobius*; APPELLÖF.
- Cirratulus cirratus*, recorded from Spitzbergen; v. MARENZELLER (1). *C. viridis*, with remarks on the genus, and description and figures of the species; PÉRIASLAVZEFF.
- Clymene ebienais*, new description of species; MCINTOSH.
- Coppingeria*, n. g. of *Ohlorhæmidæ* with *C. longisetosa*, n. sp., from Australia, description, anatomy, and figures; HASWELL (1).
- Dasychone herdmanni*, n. sp., Britain; HORNELL (1).
- Dinophilus tenuatus*, recorded on Devonshire Coast; GARSTANG (1).
- Drieschia*, n. g. of *Polynoidæ*, with *D. pelagica*, n. sp., pelagic, from Ceylon; MICHAELSEN (4), pp. 96-99, description and figures.
- Dujardinia*: from Port Chalmers; PARKER.
- Euchone papillosa*, recorded from Spitzbergen; v. MARENZELLER (1).
- Eulalia vellifera*, recorded from Black Sea; PÉRIASLAVZEFF.
- Eunice gigantea*, recorded from the English Channel; LACAZE-DUTHIERS.
- Eusyllis blomstrandii*, description and figure; v. MARENZELLER (1) p. 411.
- Exogone naidina*, with "lateral buds" on Coast of Devonshire; BUCHANAN.

*Gygera lacunosa*, Schm., Ceylon, description and figure; MICHAELSEN

(4). *G. annulata* Gr., from Black Sea; PÉRIASLAVZEFF. Blood of *Gygera*; GRIFFITHS (2).

*Haplobranchia*: on Coast of Devonshire; BUCHANAN.

*Hormones*: species parasitic on *Echinoderms*; MAYDORF (3) & CÚRNO

*Iphione spinosa*, Käg., from Ceylon, remarks on; MICHAELSEN (4), p. 95.

*Lapdonatus coccinilepis*, Gr., from Ceylon, remarks on; MICHAELSEN (4), p. 35.

*Leucodere caeca*, OERST., living in the Sponge *Microciona*; HORNELL (2).

*Leonia variegata*, young specimen (?), from Ceylon; MICHAELSEN (4) p. 102.

*Megalia*, n. sp. and *Myria*, n. sp., on Devonshire Coast; BUCHANAN.

*Megilona*: larvæ found on Devonshire Coast; BUCHANAN, BLES.

*Nectechia*, n. g. of *Polysida*, with *N. grimaldii*, n. sp., dredged to the "Hirondelle," pelagic, and with extremely long ventral setæ v. MARENZELLER (2).

*Nematonereis oculata*, Schm., from Black Sea; PÉRIASLAVZEFF.

*Nephthys longicornis*, n. sp., with remarks on the genus; PÉRIASLAVZEFF

*Nereis longicirrus*, Schm., Ceylon, described and figured; MICHAELSEN (4) pp. 92-102. Blood of *Nereis*; GRIFFITHS (2). Dimogony in *Nereis*; CHUX. Cell-kinage of *Nereis*; WILSON.

*Nerita extensata*, found again, and on British Coasts; BUCHANAN.

*Ophirius acuminatus*, from Spitzbergen, description; v. MARENZELLER (

*Ophryotrocha*, n. sp., or an allied n. g., Coast of Devonshire; BUCHANAN

*Pectinaria americana* and *belgica*, distinguished from one another HORNELL (1).

*Phanacia exilis*, Gr., Ceylon; MICHAELSEN (4).

*Phyllodoce corniculata*, Black Sea; PÉRIASLAVZEFF. *P. macrolepidota* Schm., Ceylon; MICHAELSEN (4).

*Pista*, n. sp., or (?) an allied n. g.; BUCHANAN.

*Polydora cornuta*, Black Sea; PÉRIASLAVZEFF.

*Polyophthalmus longisetosus* and *collaris*, n. spp., Ceylon; MICHAELSEN (

*Polynoe halioti*, var. *kyana*, n. var., Liverpool Bay; HORNELL (1).

(*Lagisca*) *extensata*, recorded as British; HORNELL (1).

*Potamilla neglecta*, recorded from Spitzbergen; v. MARENZELLER (1).

*Protodrilus leuckartii*, Hatcher, on Devonshire Coast; BLES.

*Pterocirrus ceylonicus*, n. sp., (? = *Phyllod.* (*Eulalia*) *macroceros*, G Ceylon, described and figured; MICHAELSEN (4).

*Sabella* and *Serpula*, blood of; GRIFFITHS (2).

*Sabella pavonina*, var. *bicolorata*, n. var., Liverpool Bay; HORNELL *S. saricaria*, protective device in; WATSON.

*Sabellaria bicornis* (*Hermella bicornis*, Schm.); MICHAELSEN (4).

*Sabelliides*, n. sp., Devonshire Coast; BUCHANAN.

*Samytha*, n. sp., or an allied n. g., BUCHANAN.

*Scalibregma longisetosum*, from Spitzbergen; v. MARENZELLER (1).

*Scolecolepis*: species described and figured, from Spitzbergen; v. MARENZELLER (1).

- Spio mecnikowianus*, Clp., (= *S. decoratus*, Bobr.) and *S. ornatus*, n. sp., from the Black Sea; PÉRIASLAVZEFF.
- "*Spiochætopterus typicus*", of Liverpool Bay, shown to be really *Chætopterus insignis*; HORNELL (1).
- Staurocephalus chiqji*, Clp., *rudolphi*, D. Ch., and *hyalinus*, n. sp., with remarks on the genus and figure of the new species; PÉRIASLAVZEFF.
- S. rubrovittatus*, on Devonshire Coast; GARSTANG.
- Stylaroides iris*, n. sp., Ceylon; MICHAELSEN (4), p. 108, description and figure. *S. cinctus* and *horstii*, n. spp., Australia, description, anatomy, and figure, HASWELL (1). *S. longisetosus*, recorded from Spitzbergen; v. MARENZELLER (1).
- Terebella*: Blood of; GRIFFITHS (2).
- Trypanosyllis striata*, n. sp., Black Sea, described and figured, PÉRIASLAVZEFF.
- Typosyllis oerstedti*, Spitzbergen, described and figured; v. MARENZELLER (1).
- Xenosyllides*, n. g., with *X. violacea*, n. sp., Black Sea, with stiff hairs on each ring of the annulate tentacles and cirri; PÉRIASLAVZEFF.

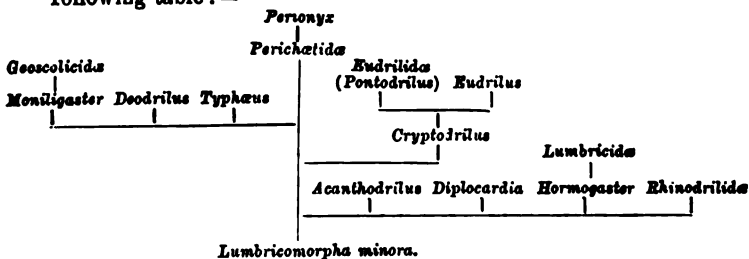
#### B. OLIGOCHÆTA (including MYZOSTOMA).

HATSCHKE [see above under "General"] would place the *Ctenodrilidae*, including *Ælosoma*, with the Polychæts. [Their usual position is retained in this Record.] Schmarda's species of Earthworms renamed; BEDDARD (2).

ROSA (1) proposes to divide the order *Terricolæ* into the following families:—

- |  |   |                               |
|--|---|-------------------------------|
| 1. <i>Moniligastridae</i> .              | { | I. <i>Cryptodrilinae</i> .    |
| 2. <i>Lumbricidae</i> .                  |   | II. <i>Eudrilinae</i> .       |
| 3. <i>Geoscolicidae</i> .                |   | III. <i>Acanthodrilinae</i> . |
| 4. <i>Megascolicidae</i> , with subfams. |   | IV. <i>Perichætinae</i> .     |

GIARD does not consider the mega- or plecto-nephric condition of the nephridia as important in classification. He expresses the relationships between the different members of the *Lumbricomorpha* in the following table:—



*Acanthodrilus schmarda*, n. sp., BEDDARD (2). *A. pictus*?, Mich., from Chiloe, ROSA (1). *A. multiporus*, development; BEDDARD (6). *A.*

- spgazsini*, Ross, referred to new genus *Kerria*; BEDDARD (10). *A. platyrus*, n. sp., Chili, MICHAELSEN, (1) p. 226.
- Ælosoma*, encystment of; BEDDARD (1) and VEJDOWSKY (1). *Æ. nireum* serve to connect the genus with the *Naidomorpha*; BEDDARD (10).
- Allolobophora festæ*, n. sp., near Tunis, description and affinities: discussion of other species; ROSA (5). *A. smaragdina*, n. sp., description, ROSA (6). *A. complanata*, in Tunisia, BEDDARD (8); 8 species from neighbourhood of Berlin, COLLIN, A. (1); 3 exotic species, ROSA (1) *A. fetida*, spiral segmentation in; MORGAN: Gerstfeldt's "*L. brevispinus*" identified with it; KULAGIN. *A. cantabrica*, n. sp. (Rosa) = "*A. hibernica*, n. sp.," Friend, Ireland and Genoa; FRIEND (13) "*A. cambrica*, n. sp.," FRIEND (4), shown by HURST & BENHAM to be a variety of *A. chlorotica*, Sav. *A. subrubicunda*, *bockii*, *profuga*, and a new species of *A. lactea*, in Yorkshire; FRIEND (11) and (12). (6 species referred to genus *Dendrobæna*; FRIEND (2). Diagnosis of and classification of genus *Allolobophora*; FRIEND (1). *A. turgida* Eisen: 2 varieties in Poland, and 4 other species; NUSBAUM (2).
- Allurus tetragonurus*, n. sp., Bangor, FRIEND (9). *A. tetraedrus*, near Berlin, COLLIN, A. (1); in Britain, FRIEND (1); in Poland, NUSBAUM (2).
- Amphichæta*, n. g., a primitive form of the family *Chaetogastridae*, with *A. sannio*, n. sp.; KALLSTENIUS.
- Annudrilus*, n. g., of family *Geoscolecidae*, with *A. quadrangulus*, n. sp. anatomy; HORST.
- Anteus heterostichon* for Schmarda's "*Hypogæon heterostichon*," and discussion of genus; BEDDARD (2). *A. brunneus* (p. 217), *appuni* (p. 218) *callichatus* (p. 220), n. spp., Venezuela, and *papillifer* (p. 214), n. sp. Brazil, MICHAELSEN (1).
- Benhamia*: *annæ*, *floresiana*, and *malayana*, n. spp. in Malay Archipelago HORST. *B. mexicana*, n. sp., Mexico, ROSA (1). *B. bolavi*, Mich., in Venezuela, MICHAELSEN, (1) p. 225. *B. itoliensis*, n. sp., by Victor Nyanza, MICHAELSEN (2). *B. büttneri* (p. 259), *gracilis* (p. 258), *inermis* (p. 209), *pallida* (p. 258), *togoënsis* (p. 260), n. spp., W. Africa MICHAELSEN (1).
- Branchiura*, n. g. of branchiate Oligochæt, with *B. souerbyi*, n. sp.; BEDDARD (4) and (5), anatomy and histology.
- Bryodrillus*, n. g. of *Enchytræidae*, with *B. ehlersi*, n. sp., found at Altenau UDE.
- Caecaria*, n. g. of *Naidomorpha*, intermediate between *Stylaria* and *Priltina*, with *C. brevirostris*, *rara*, and *silesiaca*, n. spp.; FLOERICKE.
- Clitellio*: genus distinct from *Limnodrilus*; BEDDARD (10).
- Criodrillus lacuum*, near Berlin; COLLIN, A. (1).
- Cryptodrillus insularis*, n. sp., Arù Is., ROSA (1). *C. dubius*, *frenchi*, *gipplandicus*, *intermedius*, *lucasi*, *macedonensis*, *minor*, *narrrensis*, *tanjilensis*, *victoriae*, *willsiensis*, n. spp., from Victoria, SPENCER (3). *C. purpureus* in Queensland, SPENCER (2).

- Dendrobana rubida*, Sav., a new variety of, occurring in Russia and Siberia, with a list of the 7 species found there; KULAGIN. Tabular view of 6 British species; FRIEND (2). *D. boeckii*, in Poland; NUSBAUM (2).
- Dero*: a species with 6 pairs contractile "lateral hearts" in segments vi-xi; BEDDARD (10).
- Desmogaster*, in Sumatra, HORST.
- Diacheta littoralis*, n. sp., proposed by BEDDARD, (2) pp. 128-130, for part of Schmarda's *Pontoscolex arenicola*.
- Embolocephalus*, n. g. for *Scenuris velutina*, Gr., and *E. plicatus*, n. sp.: anatomy and histology of both species; RANDOLPH.
- Eudrilus büttneri*, n. sp. (p. 256), W. Africa, *E. roseus*, n. sp. (p. 224), Venezuela, MICHAELSEN (1).
- Geoscolex maximus*, for Schmarda's *Lumbricus paucisetis*; BEDDARD, (2) pp. 119-121. *G. maximus*, from Brazil, ROSA (1).
- Glyphidrilus*, n. g. of *Geoscolecidae*, with *G. weberi*, n. sp., Malay Archipelago; HORST.
- Gordiodrilus*, n. g., provisionally belonging to the family *Ocnodrilidae*, with *G. ditheca*, *elegans*, *robustus*, and *tenuis*, n. spp., from West Africa, and *G. dominicensis*, n. sp., from I. of Dominica; BEDDARD (3).
- (*Hypogeon heterostichon*, Schm.) = *Auteus heterostichon*, (*H. orthostichon*, Schm.) = *Megascolides orthostichon*; BEDDARD (2).
- Kerria*, n. g., intermediate between the *Acanthodrilidae* and the *Ocnodrilidae*, with *K. halophila*, n. sp., found in very salt water in the upper reaches of the Pilcomayo R.; BEDDARD (10).
- Kynotus michaelsenii*, n. sp., Madagascar, and remarks on the family *Geoscolecidae*; ROSA (4). Criticism of the genus, leading to the conclusion that it is closely allied to the genus *Microcheta*; BENHAM (1). *K. kelleri*, n. sp., Madagascar, MICHAELSEN, (1) p. 254.
- Limnodrilus*, distinguished from genus *Clitellio*; BEDDARD (10).
- Lumbricus*: digestion, GREENWOOD: circulation, GRIFFITHS (1): blood, GRIFFITHS (2): intra-epidermal blood vessels, LENHOSSÉK (2): individual variation in position of nephridio pores, HUBRECHT: spiral metamerism, CORI: nervous system, RETZIUS, CERFONTAINE: origin, course, and termination of the sensory nerve-fibres, LENHOSSÉK (1). (*L. fluviiventris*, Leuck.), referred to *L. puter*, Hoffm.; (*L. triannularis*, Gr.) to *L. rubellus*, Hoffm.; (*L. brevispinus*, Gerstf.) to *Allolobophora fatida*: KULAGIN. (*L. rubescens*), n. sp., England, FRIEND (2), shown by HURST, and confirmed by BENHAM (2), to be *L. festivus*, Sav.; (*L. terrestris*), FRIEND (2), shown by HURST to be *L. herculeus*, Sav. HURST gives reasons for discarding the name *L. terrestris* altogether. *L. eiseni*, as a rare British species; FRIEND (3). 3 species of *Lumbricus* near Berlin; COLLIN, A. (1). 2 varieties of *L. rubellus* in Poland, and 2 other species; NUSBAUM (2).
- Megascolex templetonianus*, n. sp., Ceylon, ROSA (7). Schmarda's "*Pericheta cingulata*" and "*P. brachycycla*" referred to genus *Megascolex*,



- and his "*P. leucocycla*" shown to be *M. caruleus*, Bourne; BEDDARD (2). *M. iris* (p. 244), *margaritaceus* (p. 245), n. spp., Samar, *pictus*, n. sp. (p. 216), Borneo; MICHAELSEN (1).
- Megascolides australis*, development of nephridia in; VEJDOWSKY (2). *M. attenuatus*, *cameroni*, *hulmei*, *incertus*, *insignis*, *manni* (with *variabilis*, n. var.), *obscurus*, *roseus*, *sinosus*, *victoriensis*, n. spp., Victoria, SPENCER (3). *M. orthostichon*, for "*Hypogæon orthostichon*," Schmarda; BEDDARD (2).
- Microchæta belli*, Cape Colony, and *M. papillata*, Natal, n. spp., anatomy; BENHAM (1). *M. belli* is shown to connect Michaelsen's genus *Kerria* with *Microchæta*. *M. benhami*, n. sp., locality unknown, ROSA, (1) p. 382. *M. rappii*, anatomy, ROSA (1).
- Microcolex algeriensis* (pp. 29-32), Algiers, and *poultoni*, Madeira, n. spp.: anatomy, with discussion of the 2 species; BEDDARD (8).
- Moniligaster japonicus*, n. sp., Japan, MICHAELSEN, (1) p. 232.
- Myzostoma pulvinar* and *alatum*, v. Graff, parasitic on *Antedon phalangium*, amendments to v. Graff's description and discussion of the sexes; PROUHO.
- Nais greefi*, n. sp., intermediate between *N. elinguis* and *N. barbata* FLOERICKE. *N. parasitica* in *Vivipara unicolor* in Egypt; SONSINO (4).
- Neodrilus monocystis*, Bed., extended description of; BENHAM (2).
- Ophidonais reckii*, n. sp., FLOERICKE.
- Paradrilus rosae*, anatomy, ROSA, (1) p. 393.
- Perichæta sumatrana*, Horst, *P. dyeri*, *sinensis*, *bermudensis*, *taprobana morrisi*, *barbadensis*, *hesperidum*, *mauritiana*, n. spp., BEDDARD (9) and discussion of external and internal characters which are important in determining species; *P. carinensis*, *bournei*, *campanulata peguana*, n. spp., from Burmah, ROSA (2); *P. rokuko*, n. sp., and other new species from Japan, BEDDARD (11), all with no setæ on clitellar segments, and atria rudimentary. *P. aeliana*, *fasciata*, and *enganensis*, n. spp., with new subspecies *P. enganensis tetra*, Engano description and anatomy; ROSA (3). *P. dubia* (Sumatra), and *P. minima* (Java), n. spp., HORST. *P. hawayana* (Hawaii), *phillipina* (Cebu), *operculata* (Java), *racemosa* (Java and Borneo), *pentacystis* (Mahé), *ijima*, Japan, n. spp., and *P. grubei* and *P. novara* n. spp., Tahiti, to replace *P. taitensis*, which is now destroyed. *P. pulchra*, n. sp. (p. 233), Luzon, *hilgendorfi*, n. sp. (p. 235), Japan *albida*, n. sp. (p. 237), Marquesas, *longa*, n. sp. (p. 239), Sumatra *udekemi*, Gr. (p. 240), Java, *mandhorensis*, n. sp. (p. 241), Bornec *marteni*, n. sp. (p. 242), Banka, *divergens*, n. sp. (p. 243), Japan and *P. neoguineensis*, n. sp. (p. 229), New Guinea; *P. monilicystis* n. sp. (from a hothouse in Botanical Gardens, Berlin), *P. pallida* (p. 227), Brazil, n. sp., MICHAELSEN (1). MICHAELSEN (1) further shows (p. 212) that his *P. heterochæta* from the Azores is only a synonym of the widely-spread *P. indica*. *P. gympiana*, n. sp., Queensland, SPENCER (2). BEDDARD (2) shows that of Schmarda's *Perichæta*, only one (*P. viridis*) really belongs to that genus; of the

- others, *P. leucocycla*, *P. cingulata*, and *P. brachycycla*, belong to the genus *Megascolex*; he makes a new species, *P. vitiensis*, for one of Schmarda's specimens labelled, "*Hypogæon* sp., aff. *H. orthostichon*."
- Perionyx excavatus*, E. Perrier; ROSA (1) and (2). *P. arboricola*, n. sp., Burmah; ROSA (2): *P. violaceus*, n. sp., Java, Sumatra; HORST.
- Photodrilus phosphoreus*, geographical distribution and position of; GIARD and MATZDORF (1).
- Phreoryctes menkeanus*, two new localities in the N. E. of France; BRUNOTTE.
- Plagiochaeta*, n. g. of *Acanthodrilidae* with *P. punctata*, n. sp.; BENHAM (2), anatomy and histology.
- Pleionogaster*, n. g. of *Perichætidae*, with *P. jagori* and *samariensis*, n. spp., Phillipine Is., MICHAELSEN, (1) pp. 247-249.
- Plutellus perrieri*, n. sp., Qu. Charlotte's I., BENHAM (1).
- Pristina longiseta*, notes on; BEDDARD (10): he concludes that *Pristina* and *Naidonina* are no longer to be regarded as distinct species.
- Pontodrilus arenae*, Fr. Müll., Brazil; MICHAELSEN, (1) p. 222.
- Pontoscolex arenicola*, Schm.; BEDDARD (2) retains this name for some of Schmarda's specimens, referring the others to the genus *Diachæta*, proposing for them *D. littoralis*, n. sp.
- Pygmaodrilus bukobensis* and *affinis*, n. spp., near Victoria Nyanza, MICHAELSEN (2).
- Rhinodrilus ecuadorensis*, n. sp., from Ecuador at a height of 14,000 feet, BENHAM (4).
- Siphonogaster* fertilizing the valley of the Niger; LOZ. *S. emini* and *stuhlmanni*, n. spp., and discussion of genus; MICHAELSEN (2).
- Sænuris velutina*, referred to new genus *Embolocephalus*; RANDOLPH.
- Sparganophilus*, n. g. of aquatic Oligochæt belonging to the family *Rhinodrilidae*, with *S. tamesis*, n. sp., Goring on Thames: anatomy and histology, and discussion of how conveyed to the above locality; BENHAM (3).
- Tykonus*, n. g., allied to *Anteus*, with *T. grandis*, n. sp., Brazil, MICHAELSEN, (1) p. 212.
- Urochæta corethrura*, at Engano; ROSA (3). *U. sp. ?*, at Malacca; ROSA (1). Abolition of genus; BEDDARD, (2) p. 126.
- Vermiculus*, n. g. of aquatic Oligochæt, with a dense covering of fine hairs or bristles, median atrium of sperm-ducts, and median spermathecal pores. *V. pilosus*, n. sp., Weymouth Coast; GOODRICH.

### 3. HIRUDINEA.

BLANCHARD (4) would divide the Hirudinids into the *HIRUDININA* or fresh-water forms (including *Hirudo*, *Hæmopsis*, *Limnatis*, *Hirudinaria*, *Macrobdella* and *Whitmania*) and the *HÆMADIPSINA* or terrestrial forms (including *Hæmadipsa*, *Moquina* and *Xerobdella*). He discusses (6) the relations between the Nephelids, *Nephelis*, *Dina*, and *Trocheta*.

*Aulastoma*: a palæarctic genus; STOLL: minute structure of eyes; MAIER: salivary glands; LEUCKART (2). *A. gulo*, in Poland, 6 new varieties: *maculata*, *sinuata*, *grubei*, *tæniata*, *lithuanica*, *umbrina*; NUSBAUM (2).

*Branchellion punctatum*, Baird, and distinction of the 2 other Australian species; BLANCHARD (3, VI). A specimen described by MACDONALD (Tr. L. S. (2) i, 1876, p. 209), from *Myliobates*, is referred to this species. *B. rajæ*, ? n. sp., occurring abundantly on *Raja nasuta*, off New Zealand; PARKER.

*Clepsine*: a universal genus, STOLL: minute structure of eyes, MAIER: salivary glands, LEUCKART (2): nephridia, BOLSIUS (2). *C. tessellata*, var. *marmorata*, n. var., Poland, NUSBAUM (2): in the posterior nares of *Cygnus atratus*, and in beak of *Haliastur albicella*, COLLIN, A. (2). *C. hollensis*, n. sp., and its metamerism, WHITMAN. *C. polonica*, n. sp., Poland, NUSBAUM (2).

*Cylicobdella*: confined to tropical new world (S. Brazil and Guatemala); STOLL.

*Glossiphonia*, splitting up of genus foretold; BLANCHARD (3, IV). *G. biocculata* and *catenigera*, geographical distribution: *G. marginata*, description and distribution; BLANCHARD (3, IV). *G. sexocculata*, description, BLANCHARD (3, V), *G. tessellata*, description, synonymy, &c., BLANCHARD (1): in Chili, and its mode of transport thence, with additions to the description of the species, BLANCHARD (2).

*Hæmopsis*: blood; GRIFFITHS (2). *H. sanguisuga*, for Diesing's *Typhlobdella*; BLANCHARD (3, II).

*Hirudo*: minute structure of eyes, MAIER: alimentary canal, HENKING: salivary glands, LEUCKART (2): blood, GRIFFITHS (2). *H. sanguisuga* in the nasal mucous membrane of man; CONDORELLI (4). *H. medicinalis*, 3 varieties in Poland, and 2 intermediate forms between them; NUSBAUM (2). Nephridia, BOLSIUS (2).

*Nepheleis*: minute structure of eyes; MAIER. *N. atomaria*, Carena, and *meyeri*, n. var. of it, description, notes on *N. occulata*, Bergm., and short description of *N. gallica* and *N. tergestina*, n. spp., BLANCHARD (3, III). *N. octocculata*, in Poland, and its varieties there, according to locality; NUSBAUM (2): 2 new varieties, and 4 new sub. varieties. *N. vulgaris*, nephridia; BOLSIUS (2).

*Piscicola*: minute structure of eyes, MAIER: salivary glands, LEUCKART (2).

*Trocheta subviridis*, in Liguria, description and geographical distribution; BLANCHARD (6), and relation of genus to other Nephelids.

*Typhlobdella korvatsi*, Diesing, shown to be only a *Hæmopsis sanguisuga* from examination of type specimen; BLANCHARD (3, III).

*Xerobdella lecontei*, description; BLANCHARD (4). It is shown to be a Hirudinid and not a Nephelid, nearest allied to *Hæmadipsa*, especially to *H. japonica*, Whitman. Only 4 pairs of eyes to this, the only species known; 2 orifices in female somite, and an infundibuliform pore on 95th ring, with no homologue in other Leeches.

## III.—PLATYHELMINTHES.

## A.—BIOLOGICAL.

## 1. GENERAL.

The 4th vol. of Bronn's "Klassen und Ordnungen des Thier-reichs," continued in 1892 by MAX BRAUN (4), gives a very full and up to date account of the digenetic Trematodes.

Bibliography of Platyhelminthes; PARONA (1). Parasitism; LOOSS (2). Anatomy and histology of Cestodes of freshwater Fish; KRAEMER (2): these are distinguished from those of warm-blooded Vertebrates by the absence of the rostellum, this being often replaced by a 5th small sucker at the front end of the scolex: excretory and reproductive systems also distinctive. Anatomy and histology of Pelagic Polyclads, v. GRAFF (1); of Tricladæ, CHICHKOFF, HALLEZ (3). Monograph of genus *Microcotyle* (11 species recognized); PARONA & PERUGIA (1). Anatomy of genus *Notocotyle* (only 2 species, *N. alveatum*, Mehlis, and *N. verrucosum*, Fröhl., recognized); MONTICELLI (3). Anatomy and histology of the Monocotylides, SAINT RÉMY (2); of *Cotylogaster michaelis*, n. g. & sp., MONTICELLI (6); of *Monostoma*, MONTICELLI (4) and (5); of *Thysanocephalum*, LINTON (5); of *Stenostoma leucops*, OTT; of *Stychoplane sargassicola*, v. GRAFF (4); of *Temnocephala madagascariensis*, n. sp., with 12 cephalic digitations, and enumeration and discussion of other species, VAYESSIÈRE (1); of *Actinodactylus*, n. g. & sp., with 12 tentacles along the lateral margin of the body radiating from it, with ventral suckers as in *Temnocephala*, and with no eyes, HASWELL (4, III); of *Geonemertes australiensis*, n. sp., DENDY (1); of *Polychærus caudatus* (n. g. & sp. of Acelous Turbellarian, fam. *Aphanostomidæ*), MARK. Anatomy of *Cotyloplana*, n. g. of Land Planarian, with suckers on ventral surface close to anterior extremity; SPENCER (1). On a freshwater Alloioceol Planarian, found in two deep wells 100 miles apart, with no pigment and no eyes; HASWELL (4, II). Anatomy and development of *Amphistomum subclavatum*; LOOSS (1). Account of freshwater Nemertines; VAILLANT, and DE GUERNE (2).

## 2. EPIDERMIS.

ZOGRAF (1) and MONTICELLI (8) both show that there is a true, though much modified, ectoderm present in the adult Cestode, which produces the cuticular layer. ZOGRAF shows, further, that this is the remnant of the ectoderm of the 6-hooked embryo which is not thrown off, but only vacuolised when the ciliated envelope is shed. BRANDES (1) maintains that there is no true ectoderm in adult Trematodes, except perhaps in *Temnocephala*; and that the cuticle is formed by an outer glandular layer of parenchyme cells, which he terms "Ectoparenchyme." BRAUN (3)

criticizes this statement, and shows that, in one *Monostomum* at least, the so-called "cuticle" is itself a metamorphosed ectoderm. HASWELL (5) shows that the ectoderm is ciliated even in the adult of certain species of *Temnocephala*. Large, oval, refractive concretions are described in the ectoderm of a freshwater Nemertine by DU PLESSIS [see also VAILLANT and DE GUERNE (2)]. Ectoderm of Triclares; CHICHKOFF.

### 3. MUSCULAR SYSTEM.

Insertion of muscles of parenchyme in *Monostomum proteus*, Braudes; WALTER.

### 4. ALIMENTARY CANAL.

Protoplasmic processes of the alimentary epithelium, by which food is taken in, in *Stenostoma*; OTT. Anterior median branch of alimentary canal over the brain absent in 2 species of *Planocera*; V. GRAFF (1). Multiplicity of pharynx in a Triclad (*Phagocyta*); anastomosis of the two recurrent branches of the alimentary canal in *Dendrocalum*; HALLEZ (2).

### 5. CIRCULATORY SYSTEM.

Hæmoglobin in the body liquid of a Turbellarian (*Syndesmis echinorum*), CUÉNOT. Vascular system only a specialized part of the excretory system in *Geonemertes*; DENDY (1). Distinct from the excretory system in *Enopla*; BÜRGER (1).

### 6. EXCRETORY SYSTEM.

KRAEMER shows that in the Cestodes of Freshwater Fish, the longitudinal vessels of the excretory system all open into a terminal vesicle in the last joint, and by its means open to the exterior posteriorly; anteriorly they communicate with the exterior by means of fine canaliculi, which branch off from a capillary vascular plexus, and lie in the neck and youngest segments. RIEHM shows that in the Cestode *Schistocephalus dimorphus* there is a pair of apertures to the excretory system in each segment; the whole system branches all over the body, and is continuous from segment to segment; he compares the arrangement to that of the tracheæ and stigmata of Insects. WALTER describes a new organ lying round the excretory pore, and opening into the end part of the efferent duct, just in front of the pore, in the genus *Monostomum*. HASWELL (2) shows that the excretory system of *Temnocephala* is intracellular, lying in a few very long and sometimes branching cells; connected with each main duct there is a much-branching system of canaliculi, containing a number of ciliated flames in the substance of the perforated cell which forms the

thick protoplasmic walls of a contractile terminal sac on each side; each sac opens to the exterior anteriorly and dorsally by pores in the same position as in many other Trematodes. DENDY (1) shows that the excretory system of his new Land Nemertine, *Geonemertes australiensis*, is also intracellular, and that the tubules end in flame cells: he did not succeed in finding apertures to the exterior. BÜRGER (1) shows that in the *Enopla* the epithelium lining the excretory canals is ciliated, and that the canals end in hollow blind swellings, also one cell layered, with a flame of cilia projecting into the lumen; the vascular system, though close to the excretory system, is not in communication with it. VOIGT (2) shows that in *Mesostomum truncatum* the efferent excretory ducts, instead of opening into the pharynx, open independently on the ventral surface; he would therefore make this species into a new genus. SEKERA, however, shows that in other species of *Mesostomum*, e. g., *M. rostratum*, the excretory pores are also independent of the pharynx. He also shows that the genus *Bothrioplana* has excretory organs of the Mesostomid type.

#### 7. ORGANS OF UNCERTAIN FUNCTION AND NOT IN CONNECTION WITH OTHER SYSTEMS.

Sommer's "Plasmatic vessels," rediscovered and described in *Tenia saginata* and *T. solium*; BLOCHMANN (1). Curious bodies in the anterior part of the segments of *T. expansa* = "interproglottidal" glands; STILES (8). [See also under "Excretory System;" WALTER.]

Unicellular glands of *Tennocephala* ducts shown to branch in the protoplasm; HASWELL (2).

#### 8. NERVOUS SYSTEM AND SENSE ORGANS.

Complete decentralisation of nervous system in *Planocera grubei*, n. sp., and approach to it in *P. simrothi*, n. sp.; V. GRAFF (1).

Nervous system of *Distomas*; CRETY: suckers shown to be especially well supplied with nerves, and therefore probably to serve as tactile organs. Eyes shown to multiply by division in a Land Nemertine; DENDY (1).

#### 9. GENITAL SYSTEM.

Vitelline nuclei are shown to exist in the ova of *Distomum richardii* by MONTICELLI (2), and by CRETY (2). MONTICELLI also finds them in *D. veliporum*; he concludes that they are produced by the cytoplasm, and probably serve as a centre for the formation of yolk, having no intimate connection with the nucleus, and playing no part in the process of fertilization. CRETY compares them to the diffuse granules in the ova of *D. megastomum*; he regards them as formed endogenously within the cell, and afterwards fusing with its protoplasm; he compares them with the similar structures in the ova of other animals. Spermatogenesis in Trematodes is dealt with by MONTICELLI (1).

SAINT REMY (3) describes the genital apparatus of the *Tristomida* (including under that head the *Tristomida* proper, the *Monocotylidæ*, and the *Udonellidæ*). He suggests that the canal of Laurer of the *Digenia* may be homologized with the vitello-intestinal canal of the *Polystomidæ*; the vagina, with which it is usually homologized, is in *Tristomida* developed as a female copulatory organ, either single or paired, but probably originally paired. BRAUN (3) describes a genital atrium in an *Amphistomum*, and suggests that the large sac present in the genus *Gastrothylax* is an enlargement of such an atrium, and serves as a brood-pouch.

[Abnormalities in the genital apparatus of *Distomum hepaticum*, see under "Variations."]

The female genital apparatus of *Amphilina* and *Caryophyllæus* is explained by MONTICELLI (9). KRAEMER (1) and (2) shows that in the *Tænia* of freshwater fishes the female genital aperture is in front of the male; on the female duct are a number of loops, serving as receptaculæ seminales; the position and form of the yolk-glands is different to what it is in *Tænia*s of warm-blooded Vertebrates. FILIPPI describes the formation of the ovigerous capsule in *T. botrioplitis*; the eggs appear to be fertilised in the ovary in this species, as there is no uterus or seminal vesicle; he thinks it probable that the proglottids are self-fertilised. DIAMARE describes the genital apparatus of *Dipylidium*.

V. GRAFF (1) confirms Lang's view as to the origin of the gonads from the intestinal epithelium in pelagic Polyclads; he also shows that the uterus is formed from the ectoderm in one species at least; that the accessory vesicle of the ♀ genital duct is a seminal vesicle; that there is a female as well as a male copulatory arrangement in two species; that the relative positions of oviduct and shell-gland are different to what they are in non-pelagic Polyclads. The uterus of the Triclad is dealt with fully by BERGENDAL (8) and (5).

### 10. REPRODUCTION, DEVELOPMENT, AND LIFE-HISTORY.

Reproduction by transverse fission is described in *Bipalium kewense* by BERGENDAL (7). VOIGT (1) questions the viviparity of *Planaria alpina*, maintained by Zschokke.

Development of Cestodes and Trematodes compared; SAINT RÉMY (5).

GRASSI & ROVELLI discuss fully the embryology and life-history of the Cestodes, comparing them with one another and with other *Platyhelminthes*; they find that the cysticercoid in *Tania elliptica* has a simple and direct development; 1 species, *T. nana* s. *murina*, has no intermediate host, and thinks that all *Tænia*s originally had but one host. The cysticerci of 8 species of *Tania* are dealt with by V. LINSTOW (3). RAILLIET & LUCET (1) point out that *Davainea proglottina* must have some other intermediate host than *Limax*: GIARD & BILLET that *Distomum hepaticum* must have some other host than *Limnaeus truncatulus*, in Tonkin: MAGALHÃES that *Tenia cuneata* must have some other intermediate host than *Allobophora fatida* in Brasil. MONIEZ (1, XI)

describes a curious larval appendage, over a metre in length, apparently forming a network in the tissue of its host when protruded, in *Gymnorhynchus reptans*; he compares it to an appendage found on several Cestodes of the type of *T. serrata*.

The cercaria of *Amphistomum subclavatum* is dealt with by LOOSS (1), and LANG. LOOSS deals with the whole development, showing how the redia is directly derived from a single organ of the embryo, and the cercaria in the same way from the redia; he regards the development as a metamorphosis, no paedogenesis coming in, and the germinal epithelium of the adult being formed from the elements not used in the development of organs of the embryo, and producing not only the genital organs of the redia and cercaria, but also, in an intermediate stage, an epithelial lining for the body cavity. LANG shows that the cercaria, escaping from *Planorbis contortus*, becomes first encysted on the skin of the young frog, and that only when this skin is shed and eaten by the frog does the animal reach its final habitat and development continue. The embryo of *Gynecophorus hæmatobius* is dealt with by RAILLIET (3), and by CAHIER; of *Gyrodactylus elegans* and 5 species of *Distoma*, by VON LINSTOW (3). The development of *Distomum caudatum*, by BLOCHMANN (2); a cyst phase of development in *D. baraldii*, n. sp., by SONSINO (2). Life-history of *Distomum hepaticum*; LUTZ: it is shown that *Limnæus pereger* (= *L. californicus*) may be an intermediate host.

HALLEZ (1) shows that all the *Turbellaria diploblastica* (Rhabdocoela and Tricladæ) have a provisional terminal larval pharynx with no sheath; and that the position of the adult pharynx is determined, after the flattening of the larva on its oral surface, by the relative amount of growth of an anterior and a posterior hemisphere; where the pharynx is posterior (e.g., Tricladæ and *Monotus fuscus*) in the adult, stages are gone through in which it is first anterior and then median; the flattening of the body accompanies the backward movement of the pharynx, i.e., the greater amount of movement of the cephalic as compared with the caudal hemisphere.

## 11. VARIATIONS.

CONDORELLI (1) gives examples of different kinds of anomalies in Cestodes, referring especially to a *Tania solium* in which the hooks were absent and replaced by twelve large papillæ resembling those of some Nematodes. RAILLIET (2, I) describes a specimen of *Cysticercus pisi-formis* with as many as six suckers. RAILLIET & LUCET (1) mention the variation in number of segments in *Davainea proglottina*. RAILLIET (2, III) records instances of fenestration of segments in *Dipylidium caninum*. WALTER mentions variations in the development of *Monostomum reticulare* from the embryo.

Asymmetry of organs is mentioned by STILES (8) in *Tania giardi*. SPENGLER describes one specimen of *Distomum hepaticum* with no male genital organs, and another with the anterior half of the right vitellarium absent and the duct on the left side only.



## 12. CLASSIFICATION, &amp;c.

Classification of Cestodes, GRASSI & ROVELLI, VILLOT (1), MONTICELLI (10). MONTICELLI (4) proposes the name "Cestodaria" for the simple unjointed monogenetic Cestodes, *Gyrocotyla*, *Amphilina*, *Caryophylla* and *Archigeles*. Current ideas on the relations between Cestodes and Trematodes: SAINT REMY (5). RAILLIET (2, VII) proposes a classification for Bird Tæniae, dividing them into 4 genera. STILES (9) discusses Blanchard's genus *Moniezia*.

MONTICELLI (6) proposes a new classification of Trematodes, and discusses the family *Aspidobothridæ*. The affinities and arrangement of the *Monostomida* is discussed by MONTICELLI (5), (4), and (3); and BRANDES (2). Brandes would exclude the genus *Didymozoon* from the family; he refers several so-called species of *Monostomum* to other genera. The position of *Tenuocephala* is dealt with by HASWELL (1) and by VAYSSIÈRE (1).

The Nemertines of the Gulf of Naples are classified, and a genealogical tree is given to show their relationships, by BÜRGER (2).

A new classification of Turbellarians is proposed by HALLEZ (3), and further one of the Tricladæ, (3) and (4). He discusses (3) the affinities of the Tricladæ with the Alloiocoels and the laws of morphogeny of the Turbellarians generally. BERGENDAL (1) classifies and discusses the affinities of the Swedish Tricladæ. V. GRAFF shows that Weldon's *Holidiscus piliger* is an acelous Turbellarian.

[For further details, see Systematic part of Record.]

## 13. DISTRIBUTION OF PARASITES ACCORDING TO THEIR HOSTS

## a. General.

Distribution of Cestodes and Trematodes, according to various hosts: STOSSICH (4); Trematodes and Cestodes of Mecklenburg and their hosts: BRAUN (5).

## b. Man.

*Tænia diminuta*, *Cysticercus cellulosus*, *Distomum lanceolatum*: ZSCHOKKE (2). *Echinococcus*: SANGALLI, SCHULTÉN, & HOMEN (1) (liver and mesentery), KINYOUN (in kidneys, liver, and bladder); multilocular form in bladder, HUBER (2): in brain, MUDD: in liver, MANGOLD. *Cysticercus*, living in lens of eye; GRAEFE. Synopsis of exotic Entozoa of Man; SONSINO (1). Bibliography of human Cestodes; HUBER (1). Parasites from Man to Animals, and vice versa: RAILLIET (1).

## c. Other Mammals.

Monograph of Distomids in Mammals; STOSSICH (1). In Domestic Animals; NEUMANN, DEWITZ, CURTICE. In Cattle and Sheep: Tæniae; STILES (3), *Echinococcus multilocularis*; STILES (4). In an

gland of Dog, *Dipylidium caninum*; RAILLIET (2, IV). In Cat, *Dipylidium trinchesei*, n. sp., DIAMARE. In Kid and Antelope, *Cysticercus tenuicollis*; RAILLIET (2, v & vi). In Hyrax, a *Tænia*; SETTI. In *Stenorhynchus* (*Ogmorhinus*) *leptonyx*, *Bothriocephalus quadratus*, n. sp., v. LINSTOW (4). In Rabbit, *Anoplocephala caniculi*; RAILLIET (2, v & vi). In Dolphin, *Tænia forsteri* (= *Prosthecoctyle*, n. g.); MONTICELLI (7). In Seal (*Cystophora*) *Bothriocephalus tectus*, n. sp., LINSTOW (4). In *Balanoptera*, *Distomum goliath*; LÖNNBERG (1). In Hedgehog, *D. caudatum* and *Trichosoma exiguum*; BLOCHMANN (2).

#### d. Birds.

Monograph of Distomids in Birds; STROSSICH (2). *Tænia*s of Birds, notes on; LINTON (1), v. LINSTOW (2): classification of; RAILLIET (2, VII). Revision of Monostomids parasitic in *Grallidæ* and *Palmipeds*; MONTICELLI (5): of *Notocotyle* in ditto; MONTICELLI (3).

In Duck, *Echinocotyle rossleri*, n. g. & sp., with 10 hooks and armed suckers, ROSSETER. In Fowl, *Davainea proglottina*; RAILLIET & LUCET (1). In Pigeon, *Tænia delafondi*; RAILLIET (5).

#### e. Snakes.

*Distomum subflavum* and *baraldii*, n. spp., in *Zamenis viridiflavus*; SONSINO (2).

#### f. Fish.

Parasites of Freshwater Fish; ZSCHOKKE (3). Anatomy and histology of *Tæniæ* of Freshwater Fish; KRAEMER. Fish in which genus *Microcotyle* found; PARONA & PERUGIA (1). *Lamna corumbica* with a n. g. & sp. of Cestode, *Ceratobothrium xanthocephalum*; MONTICELLI (5). *Scorpena porcus* with *Bothriocephalus caudatus*; MARCIALIS. *Coregonus muræna* with cysts of a *Distomum* in wall of heart; ZACHARIAS. *Box salpa* with 2 species of *Monostomum*, of which one new; MONTICELLI (5). Trematodes ectoparasitic on different fish; PARONA & PERUGIA (2). Monogenetic Trematodes of Roscoff, and the fish on which they are found; SAINT RÉMY (4). Transitory parasitism of a Triclad Turbellarian on the larva of a fish; VOGT.

#### g. Molluscs.

*Cercariæ* in (chiefly) Gasteropods of Egyptian wells; SONSINO (4). A new *Cercaria* in *Limnæus truncatulus*, v. LINSTOW (3): in *Donax anatinum* (*C. pectinata*), HUET. *Helix hortensis*, the intermediate host for *Distomum caudatum*; BLOCHMANN (2). *Limnæus pereger* (= *L. calmensis*), an intermediate host for *D. hepaticum*; LUTZ. LUTZ also gives interesting details with regard to the effect of the parasites on the snails, the mortality of the latter, &c.

*h. Crustaceans.*

In Crayfish, a *Distomum* (? *D. nodulosum*); LINTON (2). In *Astacoides*, a n. sp. of *Temnocephala*; VAYSSIÈRE (1). In branchial cavity of a land Crayfish, *Actinodactylus*, n. g. of *Temnocephalæ*; HASWELL (4). In *Cyclops brevicaudatus* and *crassicornis*, the cysticerci of *Tirnia setigera* of the Goose and *T. brachycephala* of *Machetea*, respectively; v. LINSTOW (2). In a Freshwater Calanid (*Eurytemora laciniulata*) a Cysticercoid resembling the one found by Mrazek in *Cyclops agilis* (Zool. Rec. 1891, *Vermes*, p. 19); RICHARD. In *Cypris cinerea*, the Cysticercus, with 10 hooks and armed suckers, of *Echinocotyle rosasteri*, n. g. & sp.: ROSETER.

*i. Echinoderms.*

On *Synapta*, cysts of *Cercaria* of *Distomum leptosomum*. In Ophiurids, *Cercaria capriciosa*, n. sp. ?; MATZDORF (3), CUÉNOT. On *Echinus*, *Syndesmis echinorum*; CUÉNOT.

*j. Plants.*

Cestodes and Trematodes in; BOS (1).

## 14. STRAY MEDICAL NOTES.

Infectious diseases of animals which can be transmitted to Man, and vice versa; PERRONCITO (*Tenia mediocanellata* chiefly dealt with in this respect); also RAILLIET (1). Study of *T. litterata*; CONDORELLI (5). Prismatic variety of *T. saginata*; COATS. Increase of *Tenias* in France during the last half century; BÉRANGER-FERAND (1). Relative frequency of different species of *Tenia*; COLLIN, G. *Bothriocephalus latus* in Holland; CATHE. Cysticercus in eye and its removal; GRAEFE, SEYFERT. Morbid phenomena caused by *Bilharzia hæmatobia*; COLLORIDI. Retention of toxins in intestine, and consequent poisoning, by intestinal worms; VONCKEN. Cases of *Echinococcus*; PUKY. *Tenia* disease in Man; BÉRANGER-FERAND (3).

[See also under 13, *b. Man.*]

## 15. METHODS, &amp;c.

Experiments for keeping Cestodes alive; LÖNNBERG (2). Methods of preparing Cestodes for histological work; LINTON (5), GRASSI & ROVELLI: of injecting excretory system in Cestodes; RIEHM. DENDY (1) recommends the use of chloroform vapour before immersion in spirit for fixing Land Nemertines. CHICHKOFF suggests a new fixing reagent for Turbellarians, similar to Lang's, but with different proportions of the constituents, and with nitric acid added; he finds that he can fix specimens, well extended, in this way. JOUBIN recommends quick plunging into boiling water for killing Nemertines; TULLBERG, paralyzing with MgCl<sub>2</sub> and killing with chromic acid, for Nemertines and Planarians; see also CUNNINGHAM.

## B.—FAUNISTIC.

## 1. PARASITIC FORMS.

Geographical distribution of exotic Entozoa of Man; SONSINO: of *Tænia*s of Man; BÉRANGER-FERAND (2).

a. *Palæarctic Region.*

Sweden: distribution of *Bothriocephalus latus* in; LÖNNBERG (3).

West Europe: distribution of *Tænia saginata* in; BLANCHARD (5).  
Large American *Distomum* in Europe; LEUCKART (1).

France: decrease of *T. solium* and increase of *T. mediocanellata* during the last half century, BÉRANGER-FERAND (1). Bois de Boulogne: Cysticeroid in a Freshwater Calanid; RICHARD. Roscoff: Monogenetic Trematodes; SAINT RÉMY (4), including 1 new species on the Sole.

Mecklenburg: Parasitic Worms, 6 genera and species of monogenetic Trematodes, 6 genera and 31 species of digenetic Trematodes, 9 genera and 30 species of Cestodes; BRAUN (5).

S. Germany, Switzerland, and Austria: Restriction of multilocular *Echinococcus* to; MANGOLD: in Würtemberg; VIERORDT.

Sardinia: *T. solium*, *T. caninus*, and *Bothriocephalus angustatus*; MARCIALIS.

Tunis: *Bilharzia* in; CAHIER, VILLENEUVE.

Egypt: parasites of freshwater Molluscs; SONSINO (4).

b. *Ethiopian Region.*

Madagascar: *Temnocephala madagascariensis*, n. sp., in an *Astacoides*; geographical distribution of genus discussed; VAYSSIÈRE.

c. *Oriental Region.*

Tonkin: Trematode parasites of oxen, *Homalogaster poirieri*, n. sp., *Distomum celomaticum*, n. sp., and *D. hepaticum*, whose intermediate host there is unknown; GIARD & BILLET.

d. *Australian Region.*

Gippsland: *Actinodactylus*, a new genus of *Temnocephalidae*; HASWELL (4, III). Distribution of genus *Temnocephala*; VAYSSIÈRE.

e. *Neotropical Region.*

South Georgia: *Bothriocephalus quadratus* and *tectus*, n. spp., and a species of *Tænia*; v. LINSTOW (4).

Brazil: *Tænia cuneata*: intermediate host in this region unknown; MAGALHÃES.

f. *Nearctic Region.*

Texas : (*Distomum texanicum*), n. sp., Francis, shown to = *F. amicanum*, Hassal, wh. ? = *D. magnum*, Bassi ; STILES (6). Distribution large American Distomum ; LEUCKART.

## 2. FREE-LIVING LAND AND FRESHWATER FORMS.

Geographical distribution of Land Planarians ; STOLL.

a. *Palæarctic Region.*

Geographical distribution of Freshwater Nemertines ; GUERNE *Rhynchodesmus* in Europe ; STOLL.

England : Freshwater Nemertine (in the Cherwell) ; BENHAM (5).

S. Germany : distribution of *Planaria alpina* and *gonoceph* VOIGT (3).

Bohemia : Freshwater Turbellarians ; KAFKA, FRITSCH & VAVRA.

Poland : 11 species of Rhabdocoels ; NUSBAUM (2) : 7 of the same 6 more species of Rhabdocoels ; WASSILIEFF : 1 species of *Vortex*, ne

Russia : 7 species of Turbellarians near Moscow not found there be ZYKOFF : only one Dendrocoel (a *Polycelis*) there. Solovetzki : Ne tines ; KNIPOVICH, p. 25. Finland : a Rhabdocoel ; LEVANDER (2).

Sweden : Tricladæ enumerated, and several species discussed, inclu *Polypostia similis*, n. g. & sp. ; BERGENDAL (1).

Spain : 2 Turbellarians from Santander ; FUSSET.

E. Asia : *Bipalium* ; STOLL.

b. *Ethiopian Region.*

Madagascar : *Bipalium* ; STOLL. *Temnocephala* [see above, u "Parasitic Forms"].

c. *Oriental Region.*

Ceylon : *Rhynchodesmus* ; STOLL.

d. *Australian Region.*

Distribution of *Geonemertes australiensis*, n. sp. ; DENDY (1).

Queensland : *Geoplana regina*, n. sp., *G. cerulea*, *Bipalium keo* SPENCER (2), DENDY (2). DENDY also records 2 other species of *Geop* and 1 of *Rhynchodesmus*.

S. Australia : *Geoplana fletcheri*, and a new variety of it, var. *adelaid* from Adelaide ; DENDY (3).

Tasmania : 4 species of *Geoplana*, not known to occur there be one of which new ; DENDY (3).

New Zealand : in the underground waters near Canterbury, an : ocel Turbellarian.

Lord Howe Island : *Geoplana* absent, and in its place a new genus of Land Planarians, *Cotyloplana*, with new species, *whiteleggi* and *punctata*; 6 new species of *Rhynchodemus*; SPENCER (1).

Fiji Isles, Friendly Isles, and Samoa : as original habitat of *Bipalium kewense*; BELL.

#### e. Neotropical Region.

S. America : *Bipalium kewense*; COLLIN, A. (2).

Chili, Brazil, Guatemala : *Polycladus*; Brazil : *Geoplana*; STOLL.

Jamaica : Freshwater Planarians and Nemertines, 1 Land Planarian; ANDREWS (1).

#### f. Nearctic Region.

*Rhynchodemus* in N. America; STOLL.

### 3. MARINE FORMS.

Geographical distribution of Pelagic Polyclads; v. GRAFF (1).

E. Baltic : 17 Turbellarians, 8 Nemertines recorded from, and the problems for further exploration of the fauna dealt with; KOJEVNIKOV.

English Channel : *Carinella polymorpha* and *Cerebratulus aurantiacus* on the Coast of Devonshire; GARSTANG (1).

Mediterranean : Nemertines of Gulf of Naples, BÜRGER (2), 65 species of which 28 are new; 1 new genus, *Hubrechtia*.

Atlantic : *Planocera simrothi* (between I. of Ascension and Equator) and *P. grubei*, n. spp.; v. GRAFF (1). Sargossa Sea : *Stylchoplana sargossicola*; v. GRAFF (4) and (1).

S. Indian Ocean : *Planocera grubei*, n. sp.; v. GRAFF (1).

Pacific Ocean.—Off New Guinea : *Stylchoplana sargossicola*; v. GRAFF (4) and (1) : *Planctoplana challengerii*, n. g. & sp.; v. GRAFF (1). Off Noumea : *Eupolia brockii*, *Cerebratulus caledonicus*, *bicornis*, *anas*, n. spp., *Eunemertes francisca*, n. sp.; JOUBIN & FRANÇOIS.

## C.—SYSTEMATIC.

### 1. CESTODA.

Affinities with other *Platyhelminths* discussed by GRASSI & ROVELLI, who also discuss affinities of Cestodes amongst themselves, criticizing VILLOT's classification of the cystic forms into *Cysticerci*, *Cysticercoides*, and *Pseudocystici*. VILLOT maintains his classification. MONTICELLI (10) proposes the following classification:—

#### Order CESTODA.

##### I. Subord. ATOMIOSOMA.

Fam. 1. *Diplocotylida*, Montic.

Fam. 2. *Tricuspidarida*, Montic.

## II. Subord. TOMIOSOMA.

Tr. A. *Atrypanorhyncha*.*Monossichionia*—Fam. 3. *Cyathobothridæ*, Montic.*Dissichionia*— { Fam. 4. *Pseudobothridæ*, Montic.  
{ Fam. 5. *Dibothridæ*, Dies.*Tetrassichionia*— { Fam. 6. *Tetrabothridæ*, Dies.  
{ Fam. 7. *Tetracotylidæ*, Dies.Tr. B. *Prypanorhyncha*.Fam. 8. *Tetrarhynchidæ*.

MONTICELLI (9) proposes name *Cestodaria* for the genera *Gyrocoty*  
*Amphilina*, *Caryophyllæus*, and *Archigetes*, intermediate betwe  
Trematodes and Cestodes.

*Adult Forms.*

*Amphilina* referred to suborder *Cestoduria*, and *A. ligulideæ*, anatom.  
MONTICELLI (9).

*Anoplocephala cuniculi*: bronze coloured specimen in rabbit; RAILLIET  
(2, II).

*Archigetes* referred to suborder *Cestodaria*; MONTICELLI (9).

*Bothrimonus*, Duv., synonymy of; MONTICELLI (10).

*Bothriocephalus latus*: in Sweden, LÖNNBERG: in Holland, CATHE.  
*angustatus* in *Scorpena porcus*, in Sardinia; MARCIALIS. *B. qua*  
*ratus* in *Stenorhynchus leptonyx*, and *B. testus* in *Cystophora prob*  
*cideæ*, n. spp., S. Georgia; v. LINSTOW (4). (*B. longicollis*) Moli  
= *Bothriotania*, n. g.; RAILLIET (2, VII).

*Bothriotania*, n. g. for (*Bothriocephalus longicollis*); RAILLIET (2, VII).

*Caryophyllæus* referred to suborder *Cestodaria*, and *C. tuba*, anatom;  
MONTICELLI (9).

*Ceratobothrium*, n. g., with *C. xanthocephalum*, n. sp.; MONTICELLI (i).

*Davainea proglottina*: some other intermediate host than *Limax*, at  
variations according to locality; RAILLIET & LUCET (1).

*Dibothriorhynchus monticellii*, n. sp.; MONIEZ (1, XII).

*Dicranotania*, n. g. for Bird *Tænia*s; RAILLIET (2, VII).

*Dipylidium caninum*, with fenestrated segments; RAILLIET (2, III):  
the anal glands of the dog; RAILLIET (2, IV). *D. trinchetti*, n. sp.  
from cat; DIAMARE.

*Drepanidotænia*, n. g. for Bird *Tænia*s; RAILLIET (2, VII).

*Echinococcus hominis*: KINYONN, SANGALLI, SCHALTÉN & HAMÉN, PUKY  
multilocular variety, MUDD, MANGOLD, VIERORDT, HUBER (2  
MANGOLD thinks it has a different cysticercus to the unilocular  
one.

*Echinocotyle*, n. g., with *E. rosseleri*, n. sp. in duck, cysticercus in *Cypr*  
*cinerea*; ROSSETER.

*Epision*, n. g., with *E. plicatus*, n. sp., LINTON (1); but identified wit  
*Tænia malleus*, STILES (10).

*Gymnorhynchus reptans*, curious long larval appendage in, and its migration; MONIEZ (1, XI).

*Gyrocotyle* referred to suborder *Cestodaria*; MONTICELLI (9).

*Moniezia*: genus discussed and its different species defined; STILES (9).

*M. expansa*: notes on anatomy, and distinction of species from others with which it is often confused; STILES (8). *M. planissima*, n. sp., STILES (8).

*Prosthecotyle*, n. g. for *Tania forsteri*; MONTICELLI (7).

*Schistocephalus dimorphus*: excretory canals shown to have a pair of apertures in each segment; RIEHM.

*Tania botrioplitis*, Gonads; FILIPPI. *T. solium*: specimen with hooks replaced by 12 large papillæ; CONDORELLI (1). *T. saginata*: its occurrence and prevalence in W. Europe in olden times; BLANCHARD (5): prismatic variety of; COATS: Sommer's plasmatic vessel in; BLOCHMANN. *T. mediocanellata*, as transmitted between man and animals; PERONCITO. *T. of Hyrax*; SETTI. *T. litterata*, anatomy; CONDORELLI (5). *T. filicollis* and *T. torulosa*, anatomy; KRAEMER (1). *T. serpentulus* and its hosts; STOSSICH (4). *T. setigera* (of Anser), cysticercus found in *Cyclops breviceudatus*; *T. brachycephala* (of *Machetes*), cysticercus found in *S. crassicornis*; v. LINSTOW (2). *T. malleus*: notes on anatomy; v. LINSTOW (2): identification of Linton's genus (*Epision*) with it; STILES (10). *T. cuneata*, in Brazil, with some other intermediate host than *Allolobophora fetida*; MAGALHÃES (1). *T. tenuirostris* found in goose; RAILLIET (2, VII). *T. compressa*, *macrocantha*, n. spp., in birds; LINTON (1). *T. dela-fondi*, n. sp., in pigeon; RAILLIET (5). *T. rallei*, n. sp.; STOSSICH (4). *T. sp.?* from a water-bird; v. LINSTOW (4). *T. imbutiformis* referred to genus *Mesocestoides*, Vaill.; RAILLIET (2, VII). *T. expansa* referred to genus *Moniezia*; STILES (9). *T. giardi*, its relations to genus *Moniezia*; STILES (9): notes on its anatomy; STILES (8). *T. lanceolata*, Blochm., made type of a new genus *Drepanidotenia*; *T. coronula* of a new genus *Dicranotenina*, RAILLIET (2, VII); *T. forsteri* of a new genus *Prosthecotyle*, MONTICELLI (7). *T. (Hymenolepis) diminuta*, very ancient case in man; RAILLIET (6): notes on anatomy; ZSCHOKKE (2).

*Thysanocephalum crispum*, anatomy; LINTON (5).

### Cystic Forms.

*Cysticercus acanthorhynchæ*, *bifurcæ*, *hamanni*, *integræ*, *tenuirostris*, notes on, and *C. lacertæ*, n. sp.; v. LINSTOW (3). *C. pisiformis*, specimen with 6 suckers; RAILLIET (2, I). *C. tenuicollis*, in a 4-6 weeks' old kid; RAILLIET (2, V): in the antelope; RAILLIET (2, VI). *C. cellulosæ* under the skin of a middle-aged man; ZSCHOKKE (2). *C.* in liver of hog; CAPRINI (1, II): alive in lens of eye; GRAEFE. Cysticercoid sp. ? in a Freshwater Calanid, *Eurytemora lacinulata*; RICHARD.



## 2. TREMATODA.

Monograph of *Distomidae* in Mammals; STOSSICH (1) gives list of 61 species, with their various hosts, and of 83 Mammals, with Distomids known to occur in each.

Monograph of *Distomidae* in Birds; STOSSICH (2): carried out on same plan, 64 species.

Histology of Trematodes; BRANDES (1). Anatomy and histology, &c., of Digenetic Trematodes; BRAUN (4).

Synopsis of Monogenetic Trematodes; SAINT RÉMY (1).

MONTICELLI (6) proposes the following classification of Trematodes:—

## Subord. I. ETEROCOTYLEA.

Fam. 1. *Temnocephalidae*.

Fam. 2. *Tristomidae*.

Fam. 3. *Monocotylidae*.

Fam. 4. *Polystomidae*.

Fam. 5. *Gyrodactylidae*.

## Subord. II. ASPIDOCOTYLEA.

Fam. 6. *Aspidobothridae*.

## Suborder III. MALACOCOTYLEA.

Fam. 7. *Holostomidae*.

Fam. 8. *Amphistomidae*.

Fam. 9. *Distomidae*.

Fam. 10. *Didymozoonidae*.

Fam. 11. *Monostomidae*.

He gives a revision of the family *Aspidobothridae*, which he would have include the genera *Aspidogaster*, *Aspidocotyle*, *Platyaspis*, *Macraspis*, and his new genus *Cotylogaster*.

HASWELL (5) in the Macleay Memorial volume of the Linn. Soc. N.S.W., gives a monograph of the family *Temnocephalidae*. In the Abh. Ges. Halle (3) he discusses the position of the family, concluding that, although he considers it to belong to the Trematodes, he could not find fault with anyone classing it as an aberrant family of Rhabdocoels.

BRANDES (2) criticizes MONTICELLI's classification as far as it affects the *Monostomidae*. He shows that the following species said to belong to the genus *Monostomum* really belong to other genera:—*M. liguloides* is an *Amphiline*; *M. squamata* and *M. spirale* belong to the genus *Distomum*; *M. echinostomum* is a synonym for *D. planicola*, and *M. hystris* for *D. endolabrum*; *M. cochleariformis* is a *Gasterostomum*; *M. cornu* he is uncertain about. There are then left 24 species belonging to the genus *Monostomum*, which he enumerates and groups.

*Actinodactylus*, n. g. of *Temnocephaleæ*; HASWELL (4, III) & (5).

*Amphistomum subclavatum*, anatomy and development, LOOSS: description of its cercaria found in *Planorbis contortus*, LANG. *A. conicum*, histology; BRANDES (1). *A. bothriophoron*, n. sp., anatomy, BRAUN (3). *A. scleroporum*, in intestine of *Chelonia viridis*; WALTER.

- Bilharzia hæmatobia*, in Tunis, VILLENEUVE, CAHIER: eggs and embryo, CAHIER, RAILLIET (3): morbid phenomena caused by it in man, COLLORIDI.
- Calceostoma elegans* and *inermis*, figured and described; PARONA & PERUGIA (2).
- Cotyllogaster*, n. g. with *C. michaelis*, n. sp., anatomy; MONTICELLI (6).
- Dactylocotyle tuschenbergii*, figured and described; PARONA & PERUGIA (2).
- Distomum caudatum*, development from cercaria, which found in kidney of *Helix hortensis*; BLOCHMANN. *D. echinatum* and *endolobium*, notes on; v. LINSTOW (3). *Distomum* parasitic in *Planocera pellucida* and *simrothi*; v. GRAFF (1). *D. folium*, anatomy, BRAUN (1) and (3): he finds it more normal than Zschokke does. *D. goliath*, v. Ben., from *Balanoptera rostrata*, description; LÖNNBERG. *D. hepaticum*, specimen with genital apparatus abnormal, SPENGLER: life-history, LUTZ: shown to have some other host than *Limnaeus truncatulus* in Tonkin; GIARD & BILLET. *D. lanceolatum*, in an Arab, in Alexandria; ZSCHOKKE (2). *D. leptosomum*, cercaria encysted on Holothurians; CUÉNOT, MATZDORF. *D. magnum*, Bassi, STILES (6): *Fasciola carnosa*, Hassall, identified with it, LEUCKART. *D. nodulosum*, parasitic in Cray-fish; LINTON (2). *D. megastomum* and *richardii*, anatomy of suckers described; CRETY (1). *D. richardii*, Vitelline nucleus in ova, CRETY (2), MONTICELLI (2). *D. veliporum*, Vitelline nucleus in ova; MONTICELLI (2). *D. species*?, Cysts found in walls of heart of *Coregonus muruena*; ZACHARIAS. *D. baraldii*, n. sp. from *Zamenis viridiflavus*, and a stage in its development, description; SONSINO (2). *D. capriciosa*, n. sp.?, (cercaria only), found in gonads and viscera of Ophiurids; CUÉNOT, MATZDORF. *D. cæломaticum*, n. sp., in Chinese oxen; GIARD & BILLET. *D. flexum*, n. sp., LINTON (1). *D. pulicis* and *sialidis*, n. spp., v. LINSTOW (3). *D. subflavum*, n. sp., from *Zamenis viridiflavus*; SONSINO (2). (*D. texanicum*), n. sp., FRANCIS, = *D. americanum*, Hassall, STILES (7), which very probably = *D. magnum*, Bassi. (*D. verrucosum*), n. sp., LINTON (1): but name already taken, STILES (10).
- Dibothrium exile*, n. sp., LINTON (1).
- Euryacelum sluiteri*, Brock: suggestion that belong to genus *Apoblema*; BRAUN (2) and (3).
- Fasciola carnosa*, Hassall, shown to = *Distomum magnum*, Bassi; LEUCKART, STILES (7).
- Gyrodactylus elegans*, notes on; v. LINSTOW (3).
- Holostomum variabile*, description and fig.; LINTON (1).
- Homalogaster poirisi*, n. sp., in Chinese oxen; GIARD & BILLET.
- Microbothrium (Pseudocotyle) apiculatum*, anatomy and histology; SAINT REMY (2) and (3).
- Microcotyle*: monograph of genus, with list of fishes on which the various species are parasitic, anatomy of 11 species; PARONA & PERUGIA (1). *M. salpæ*, n. sp., in Salpa; PARONA & PERUGIA (1).

*Monostomum*: revision of all the species parasitic in Grallids and Pal-  
mipeds; these are reduced to 3:—*flavum*, *mutabile*, and *sarcidonicola*;  
MONTICELLI (5). *M. capitellatum*, in Box Salpa, notes on; MONTI-  
CELLI (4). (*M. cymbium*) = *M. flavum*, its anatomy and affinities;  
MONTICELLI (5). *M. mutabile*, Zed., epidermal layer; BRAUN (3).  
*M. spinosissimum*, St., and *stossichianum*, n. sp., in Box Salpa, notes  
on; MONTICELLI (4). *M. trigonocephalum*, *reticulare*, and *proteus*,  
in intestine of *Chelone viridis*, and points in anatomy; WALTER.  
(*M. oratum*), Molin., and (*attenuatum*), Rud., = *Notocotyle verru-*  
*cosum*; MONTICELLI (3). *M. alveatum*, Mehlis? = young of *N. ver-*  
*rucosum*; MONTICELLI (3).

*Notocotyle*: historical sketch, anatomy and systematic, of the genus;  
MONTICELLI (3): two species (*N. verrucosum* and *N. alveatum*)  
recognized.

*Octobothrium pollachii* and *chrysophrii* on fish at Roscoff; SAINT  
RÉMY (4).

*Octocotyle leptogaster* and *thunninae*, figured and described; PARONA &  
PERUGIA (2). *O. scombri*, discussion of name; PARONA &  
PERUGIA (2).

*Onchocotyle appendiculata* and *premanti* on fish at Roscoff; SAINT  
RÉMY (4).

*Phyllonella soleae*, gonads, SAINT RÉMY (3): note on, PARONA &  
PERUGIA (2).

*Plagiopeltis duplicata*, figured and described; PARONA & PERUGIA (2).

*Pseudocotyle squatinæ*, notes on; PARONA & PERUGIA (2).

*Temnocephalæ*: monograph of family, HASWELL (5): position and  
relationships, HASWELL (3): discussion of genus *Temnocephala*,  
geographical distribution of species, and habits, VAYSSIÈRE: excre-  
tory system, HASWELL (2). *T. madagascariensis*, n. sp., parasitic on  
*Astacoides madagascariensis*, anatomy and histology, VAYSSIÈRE:  
three other new species, HASWELL (5) [See also *Actinodactylus*, n. g.  
of *Temnocephalæ*; HASWELL (4, III) and (5).]

*Tetraonchus van benedenii*, additional description and note on habitat;  
PARONA & PERUGIA (2).

*Tristomum mola* and *interruptum*, note on occurrence; PARONA &  
PERUGIA (2).

*Udonella pollachii*, note on occurrence; PARONA & PERUGIA (2) & SAINT  
RÉMY (4). *U. n. sp.* on *Solea vulgaris*; SAINT RÉMY (4).

#### CERCARIAS.

*Cercaria Limnæa truncatulus*, n. sp., v. LINSTOW (3). *C. pectinata*, n. sp.,  
from *Donax anatinum* (its final host probably being a sea bird),  
anatomy; HUET. *C. virax*, ? n. sp., found in *Cleopatra bulminoides*;  
*C. obscura*, ? n. sp., found in *Limnæa natalensis*; *C. pleurolophocerca*,  
n. sp., found in *Melania tuberculata* and *Cleopatra bulminoides* (tail  
with transparent, bilateral, expanded membrane, supported by pro-

cesses resembling setæ, probably the cercaria of an *Amphistomum*); *C. capsularia*, n. sp., in *Cleopatra bulminoides*; *C. pigmentata*, of *Amphistomum* sp. P; *C. (? agilis*, of Filippi), of *Distomum recurvatum*, v. L., in *Physa alexandrina* and others; *C. distomatosa*, sp. ?, in *Cleopatra bulminoides*; *C. microcotyle*, Fil., *C. costata* and *fusicauda*, La Val. St. G., with the different Molluscs in which they are found: SONNINO (4).

### 3. NEMERTINEA.

BÜRGER (2) proposes the following classification for the Mediterranean forms :—

#### Order A. PROTONEMERTINI.

Genus 1. *Carinina*, with 1 species.

Genus 2. *Carinella*, with 10 species, of which 4 are new.

Genus 3. *Hubrechtia* (n. g.), with 1 species.

#### Order B. MESONEMERTINI.

Genus 4. *Cephalothrix*, with 5 species, of which 3 are new.

Genus 5. *Carinoma*, with 1 species.

Order C. METANEMERTINI [= *Enopla* of M. Schulze. (To be dealt with in a second part of the paper.)]

#### Order D. HETERONEMERTINI.

##### Suborder a. AMICRURÆ.

Genus 6. *Eupolia*, with 4 species.

Genus 7. *Valencia*, with 2 species, of which 1 is new.

Genus 8. *Iineus*, with 14 species, of which 9 are new.

Genus 9. *Borlasia*, with 2 species, of which 1 is new.

##### Suborder b. MICRURÆ.

Genus 10. *Micrura*, with 6 species.

Genus 11. *Cerebratulus*, with 18 species, of which 10 are new.

Genus 12. *Langia*, with 1 species.

The relationships are expressed in a genealogical tree.

History of Freshwater Nemertines, their geographical distribution, and their origin; GUERNE (2). Notes on Freshwater Nemertines; VAILLANT.

Nemertines of Noumea; JOUBIN & FRANÇOIS: of the Baltic (8 spp.); KOJEVNIKOV: of Solovetzki; KNIPOVICH.

(*Balanocephalus pellucida*), v. Kennel, = *Eupolia pellucida*, v. Ken.; BÜRGER (2).

*Borlesia immaculata*, n. sp., Gulf of Naples, BÜRGER (2).

*Carinella polymorpha*, on the English Coast; RICHES, GARSTANG (1). *C. albida*, *minuta*, *nothus*, *rubicunda*, n. spp., Gulf of Naples, BÜRGER (2). (*C. annulata*), McInt., = *C. macintoshi*, n. sp.; BÜRGER (2).

*Cephalothrix bipunctata*, *fragilis*, *hymenæus*, n. spp., Gulf of Naples, BÜRGER (2).

*Cerebratulus acutus, ærugatus, anguillula, aureolus, candida, ferrugineus, fuscoides, lividus, notabilis, simulans, ventrosulcatus*, n. spp., Gulf of Naples, BÜRGER (2). *C. anas, bicornis, caledonicus*, n. spp., Noumea, JOUBIN & FRANÇOIS. *C. aurantiacus*, Gr., on Devonshire Coast; GARSTANG (1). (*C. dohrnii*), Hubr., = *Lineus dohrnii*; (*C. geniculatus*), Qfg., = *L. geniculatus*; (*C. grubei*), Hubr., = *L. grubei*; (*C. delle chiaje*), Hubr., = *Micrura delle chiaje*; (*C. tristis*), Hubr., = *Micrura tristis*; BÜRGER (2). *C. aurostriatus*, Bürg., in Noumea: notes on; JOUBIN & FRANÇOIS.

*Eunemertes francisca*, n. sp., Noumea, JOUBIN & FRANÇOIS.

*Eupolia brockii*, Bürg., in Noumea: notes on; JOUBIN & FRANÇOIS.

*Geonemertes australiensis*, n. sp., Australia, DENDY (1).

*Hubrechtia*, n. g. for *H. desiderata*, v. Ken.; BÜRGER (2).

*Lineus coccineus, gelbus, kennelii, lobianki, molochinus, nigricans, parvulus, rufocaudatus, versicolor*, n. spp., Gulf of Naples, BÜRGER (2).

*Polia geniculatus*, d. Ch. (*Cerebrat. genic.*, Qfg.), = *Lineus geniculatus*; BÜRGER (2).

*Taraxacum aquarum dulcium* (?), in England; BENHAM. *T. lacustris*, in Lake of Geneva; DE PLESSIS.

*Valoniopsis blanda*, n. sp., Gulf of Naples, BÜRGER (2).

#### 4. TURBELLARIA.

HALLER 4 and 3 would get rid of the Order *Dendrocoela* altogether, and divide the Turbellarians into the following 2 groups:—

1. *Diploblastica*, including the *Rhabdocœlida* of Graff, and the *Tricladæ* of Lang.

2. *Triplblastica*, including the *Polyclada* of Lang.

He gives in (1) an embryonic law determining the position of the pharynx in the adult for all his "*Diploblastica*," finding that it depends on the relative amount of growth of the cephalic and caudal hemispheres of the larva. He discusses previous classification gives laws of Morphogeny of the Turbellarians, and a further classification of the Tricladæ, while discussing their affinities with the Alloicoœls in (3). In (4) and in (3), the Tricladæ are divided in 3 tribes, which, with the families included in each, are seen in the following table:—

Order *Triclada*. Tribe 1. MARICOLA.

Fam. i. *Otoplanida*.

Fam. ii. *Procerodida*.

Fam. iii. *Bdellurida*.

Tribe 2. PALUDICOLA.

Fam. iv. *Planarida*.

Fam. v. *Anocelida*.

Fam. vi. *Dendrocoelida*.

## Tribe 3. TERRICOLA.

Fam. vii. *Limacopsida*.Fam. viii. *Geoplanida*.Fam. ix. *Polycladida*.

BERGENDAL (1) would divide the Swedish Tricladæ into 2 families:  
 A. *Uteriporidae*; B. *Planariadæ* (including the subfamilies *Planariæ*,  
*Polycelidæ*, and *Gundadæ*).

Anatomy and histology of Tricladæ; CHICHKOFF. Abnormalities in Tricladæ; HALLEZ (2). Uterus of Tricladæ; BERGENDAL (6). Temporary parasitism of a Triclad; VOGT. Terrestrial Tricladæ from Queensland; DENDY (2) and SPENCER (1): from Tasmania; DENDY (3): from Lord Howe I.; SPENCER (1).

The Pelagic Polycladæ are dealt with very fully by v. GRAFF (1). Lang's 9 species are reduced to 3, and 2 new ones are added. The anatomy and geographical distribution of the group is fully discussed.

Spanish Turbellarians (2 species), FUSSET: Bohemian, FRITSCH & VÁVRA (2 + 9 species), KAFKA. Turbellarians of the Baltic (17 species), KOJEVNIKOF: of Moscow (8 species), ZYKOFF: of Warsaw (11 species of Rhabdocœlæ), NUSBAUM; (13 species of Rhabdocœlæ, of which only 7 the same as in Nusbaum's list), WASSILIEFF, with notes (in Russian) on the various species.

*Bipalium kewense* shown probably to have come originally from the Fiji Is.; BELL: its presence in Queensland; SPENCER (2), DENDY (2): in Asia and Madagascar; STOLL: its multiplication by transverse fission; BERGENDAL (5).

*Castrada radiata*, and ? a n. sp., near Warsaw, NUSBAUM.

*Cotyloplana*, n. g., of Land Planarians, with *C. whiteleggi* and *C. punctata*, n. spp., Lord Howe I.; SPENCER (1).

*Dendrocelum lacteum* and *punctatum*, affinities discussed; BERGENDAL (1). *D. nausicæ*: fusion of branches of the alimentary canal; HALLEZ (2).

*Derostoma elongatum*, Gr., and *typhlops*, Vejd., near Warsaw, notes on; WASSILIEFF.

*Geoplana* in Brazil and Tasmania; STOLL. *G. cærulea* and *G. regina*, n. spp., Queensland, DENDY (2), and SPENCER (2). 4 species in Tasmania, 1 in Adelaide, together with a new variety, *G. fletcheri*, var. *adelaidensis*.

*Gunda* sp. ?, temporarily encysted in the skin of a young muraenid fish; VOGT. *G. ulvæ*, remarks on; BERGENDAL (1).

*Gyrator hermaphroditus*, Ehrb., near Warsaw; NUSBAUM: remarks on synonymy; WASSILIEFF.

(*Haplodiscus piliger*), Weld., = a species of *Convoluta*; v. GRAFF (3).

*Macrostomum hystrix*, near Warsaw; NUSBAUM: notes on; WASSILIEFF.

*Mesostomum*, nephridial system; VOIGT (2), SEKERA. *M. productum*, near Warsaw, NUSBAUM; *M. personatum*, *viridatum*, near Warsaw, NUSBAUM, WASSILIEFF (synonymy discussed).

*Microstomum lineare*, near Warsaw; NUSBAUM: notes on, WASSILIEFF.

*Opisthomum pallidum*, notes on ; WASSILIEFF.

*Oliethanella*, name proposed for n. g. (for *Mesostomum truncatum*) ; VOIGT (2), but see SEKERA.

*Othelosoma symondsii*, anatomy ; V. GRAFF (2).

*Phagocyta*, multiple pharynx ; HALLEZ (2).

*Planaria lactea*, *montana*, *polychroa*, n. spp., Middle Europe, anatomy and histology ; CHICHKOFF. *P. alpina*, reproduction ; VOIGT (1).

*P. alpina* and *gonocephala*, distribution ; VOIGT (3). *P. lugubris*, *polychroa*, *torra*, notes on ; BERGENDAL (1). (*P. sargossicola*), Martens, = *Stylochoplana sargossicola* ; V. GRAFF (4).

*Planocyclana*, n. g. for *P. challengerii*, n. sp., New Guinea ; V. GRAFF (1), figured and described.

*Planocera pellucida*, Mertens, *P. grubei*, Atlantic and Indian Oceans, *simrothi*, between the I. of Ascension and the Equator, n. spp. ; V. GRAFF (1).

*Polycelis cornuta*, distribution ; VOIGT (3). *P. cornuta*, *nigra*, and *tenuis*, synonymy discussed ; BERGENDAL (1).

*Polychaerus*, n. g. of Acelous Turbellarians, with *P. caudatus*, n. sp., MARK.

*Polycladus* ; distribution of genus in Chili, Brazil, and Guatemala ; STOLL.

*Polypostia*, n. g. for *P. similis*, n. sp., Sweden ; BERGENDAL (1) (not described).

*Rhynchodemus dubius*, *fasciatus*, *fletcheri*, *grandis*, *laterolineatus*, *mediolineatus*, n. spp., Lord Howe I. ; SPENCER (1). Distribution of genus (Europe, N. America, Ceylon) ; STOLL : in Queensland, DENDY (2).

*Stenostoma leucops*, anatomy ; OTT : occurrence in Warsaw, NUSBAUM, WASSILIEFF.

*Stylochoplana sargossicola*, v. Graff, Sargossa Sea and N. Coast of New Guinea, description ; V. GRAFF (4). Distribution, nervous system, Gonads ; V. GRAFF (1).

*Syndesmis echinorum* on Echinus ; CUÉNOT.

*Uteriporus vulgaris*, BERGENDAL (5), (6), and (1).

*Vortex pictus*, *serpentinatus*, *truncatus*, and n. sp. (figured), near Warsaw ; WASSILIEFF. *V. millportianus*, common near Warsaw ; NUSBAUM.

An Alloioceol Turbellarian, to which no name is given, found in the underground waters of Canterbury, New Zealand, is briefly described by HASWELL (4, II).

#### IV.—NEMATODA, ACANTHOCEPHALA, and CHÆTOGNATHA.

##### A.—BIOLOGICAL.

###### 1. GENERAL.

Monograph of the *Acanthocephala*; HAMANN (2), KAISER (1). KAISER criticizes some points in HAMANN's monograph in an appendix.

General account and classification of the *Chætognatha*; STRODTMANN.

Anatomy and histology of *Bradynema rigidum*; STRASSEN: of *Myzomimus scutatus*; STILES (1): of *Mermis nigrescens*; v. LINSTOW (5): of *Strongylus crurus*; STRÖSE: of *S. conroluta*; STADELMANN: of *Tylenchus fucicola*, n. sp.; DE MAN: of *Filaria apipillocephala*, n. sp.; CONDORELLI (2): of *F. bancrofti*; v. LINSTOW (1): of *Nectonema agile*; WARD, pp. 143-177.

###### 2. EPIDERMIS.

JAMMES (1) shows that there is at first a well-developed continuous layer of ectoderm cells; that then a number of these take on a protective function and become the "cuticle," while the rest persist in the "granular layer" of the adult, especially in the so-called "nerve regions": the more parasitic the Nematode is, the more ectoderm is converted into cuticle, and the less persists as "granular layer." CHATIN also shows that there is originally a cellular ectoderm, at least in *Heterodera*. CONDORELLI (2) describes a new species of *Filaria*, in which the cuticle is annulate, though the rings are not complete at the sides. WARD describes the double row of lightly attached, immovable bristles, along the dorsal and ventral lines of *Nectonema agile*. Cuticle of *Bradynema*; STRASSEN.

###### 3. MUSCULAR SYSTEM.

Histology of muscle cells of *Ascaris* and other Nematodes; BÜTSCHLI, ROHDE (1, I): of *Mermis*, comparing them with those of *Amphioxus*; ROHDE (1, II). In *Gordius*, ROHDE (1, III) finds the different stages in the development of the muscle-cells (coelomyarian and holomyarian type) persistent in the adult *G. tolosanus*; in *G. prelii* there are only muscle-cells of the coelomyarian type, but these are open towards the sub-cuticle, and not towards the coelom, as in *Ascaris*.

###### 4. DIGESTIVE SYSTEM.

Rudimentary condition of alimentary canal and absence of functional anus in *Nectonema*; WARD: in *Bradynema*; STRASSEN. Oesophagus of *Ascaris* ectodermal, not entodermal; BOVERI. Formation of stomodeum and proctodeum from the mesoderm in *Bradynema*; STRASSEN.



## 5. COELOM.

Development in Nematodes ; HAMANN (1), JAMMES (2). It is shown that there is no splanchnic mesoblast ever developed, and therefore that the "coelom" of Nematodes is not properly homologous with that of other animals. Development in *Sagitta*, see under "11. Development."

## 6. VASCULAR SYSTEM.

A new species of *Echinorhynchus* (*E. hamanni*) with lemniscæ consisting of four plates, two on each side, each bent in the middle, and the one lying inside the other ; wall-less blood-vessels both in them and in the cutis ; v. LINSTOW (4).

## 7. EXCRETORY SYSTEM.

HAMANN (1) maintains that in Nematodes the excretory vessels are mesodermal in origin, and that even in the adult they lie in the connective tissue of the lateral ridges, and not in the lateral ridges themselves. KAISER (2) has discovered numerous flame-cells in the two disc-shaped bodies, near the genital aperture of *Echinorhynchus gigas* ; each flame is composed of a number of parallel thin cilia in constant undulation, and they together form an excretory organ in connection with the three vascular spaces which lie in the walls of the uterine bell, passing from the coelom into the uterus.

## 8. LATERAL LINES.

Their ectodermal origin ; WANDOLLECK : and consequent distinction from the excretory vessels ; HAMANN (1). CONDORELLI (2) describes a new species of *Filaria* with a ringed body and segmented lateral line.

## 9. NERVOUS SYSTEM AND SENSE ORGANS.

Of *Ascaris megalocephala*, several new points, HESSE ; two kinds of sensory organs in the lips described. Of *Nectonema agile*, WARD, the brain is placed ventrally, but above it there are four large conical cells, sending processes down to it, which are probably ganglion cells. HAMANN (2) maintains that the cephalic ganglion of *Echinorhynchus* is endodermal. KAISER (1) does not agree with him (pt. 2), and criticizes him (Appendix). Development of the whole of the nervous system, like the granular layer, from a single tissue of neuroepithelial elements in *Ascaris* ; JAMMES (1). Histology of nerve in Nematodes, a criticism of APÁTHY [see Annelid part of Record], and maintaining that there is nothing in nerves corresponding to the contractile fibrils of a muscle-cell, though in both kinds of cells there is spongioplasm ; ROHDE (1, 1). Nerve of *Mermis* compared with that of *Amphioxus* ; ROHDE (1, 11). Nerve of *Gordius* ; ROHDE (1, 111).

## 10. GENITAL SYSTEM.

On the origin of the germ cells, as distinguished from the somatic cells, in *Ascaris megalocephala*; BOVERI: part of the ectoderm, as well as meso- and endoderm, shown to arise from one of the two first segmentation spheres, and from this the two archigonad cells are developed. Centrosomes in egg of *A. megalocephala* shown to be present at the very beginning of the development of the egg, before the expulsion of the polar body; LEBRUN.

## 11. DEVELOPMENT AND LIFE-HISTORY.

Segmentation and gastrulation in *Strongylus*; WANDOLLECK. According to JAMMES (2), there is no true gastrula stage in *Oxyurus*, but a solid planula of ectoderm and mesendoderm, the endoderm remaining solid even after its separation from the mesoderm. Gastrula stage in *Echinorhynchus*; HAMANN (2) & KAISER (1) take different views.

Formation of coelom in *Sagitta* shown not to be enterocoelic, as hitherto supposed, but schizocoelic, the pouches of the archenteron only becoming part of the alimentary canal of the adult; JOURDAIN, M. S. Formation of "coelom" in Nematodes; HAMANN (1), JAMMES (2), [see under "Coelom"]: according to both the body cavity arises as a split between mesoderm and endoderm, there being no splanchnic mesoblast. WANDOLLECK shows the formation of the mesoblast in *Strongylus* from two pole cells of the endoderm posteriorly. Mesoblast formed from the ectoderm, and give rise to almost all the organs in *Bradynema rigidum*; STRASSEN.

WANDOLLECK shows how the different organs are formed from the three germinal layers in *Strongylus*; the nervous system is developed from the ectoderm, the large posterior mesoderm cells persist and form the gonads. In *Oxyurus*, JAMMES (2), the gonads are formed in the middle of the body, the only part where the mesoderm is more than one-cell layered. According to BOVERI, in *Ascaris* the gonads are formed from cells which were originally part of the ectoderm. In *Sagitta* they are shown to arise from the mesoblast by JOURDAIN, M. S.

Development of *Bradynema rigidum*, STRASSEN: of *Heterakis*, RAILLIET & LUCET (2): of *Echinorhynchus*, KAISER (1).

Life-history of *Filaria papillosa*, DEUPSER: of *F. recondita*, CALAN-DRUCCIO: of *Sclerostomum tetracanthum*, GILES (1): of *Strongylus convolutus*, STADELMANN: of *Mermis nigrescens*, v. LINSTOW (5): of *Gordius pustulosus*, CAMERANO (1): of *Echinorhynchus proteus*, ZSCHOKKE [see under "Distribution according to hosts"].

Discovery of male: of *Filaria medinensis* (living inside the female), CHARLES: of the *Filaria* of the "boutons hémorrhagiques" of the ass, RAILLIET & MOUSSU: of *Gordius pustulosus*, CAMERANO (1). Discovery of female of *Nectonema agile*; WARD.

Descriptions of embryos of *Filaria sanguinis hominis*, NABL SABBRAZÈS : of embryos and larvæ of *F. recondita*, CALANDRUCCIO.

Pædogenesis in an *Echinorhynchus*, HAMANN (2) : criticized, KILB (1). Pædogenesis and protandrio hermaphroditism, without heterogeneity in *Bradynema rigidum* ; STRASSEN.

## 12. VARIATIONS.

STILES (1) shows that the individual variation amongst par Nematodes is so great that were it not for the complete series of connecting links, the extremes might be regarded as distinct species.

## 13. CLASSIFICATION.

JOURDAIN, M. S., proposes to class the *Chatognatha* with the *Aesci* and *Amphioxus* as a group, the "Protovertebrata." STRODTMANN proposes a classification for the group CHÆTOGNATHA in itself, recognizing genera : *Sagitta*, *Krohnia*, and *Spadella* ; he enumerates the characteristics of value in classification, and gives tables for distinguishing species. A classification of the ACANTHOCEPHALA, recognizing families, is given by HAMANN (3), [see Systematic part of Recueil]. The systematic position and relationship of *Nectonema agile* is discussed by WARD, pp. 182-188, and it is concluded that the genus is most nearly allied to the *Gordiidae*, since it has most of the characteristics which separate this family from the rest of the Nematodes.

## 14. DISTRIBUTION ACCORDING TO HOSTS.

### a. General.

Distribution of several Nematodes, and of *Echinorhynchus*, according to hosts, STOSSICH (4) : of Mecklenburg species (35 Nematodes, and 2 species of *Echinorhynchus*), BRAUN (5).

### b. Mammals.

Schlerostomids of equine animals, GILES (1) : one new species (*robustum*) in mules, GILES (2). *Filaria* in ass, RAILLIET & MOULIN in body cavity of horse and cattle, STILES (2). *F. papillosa*, in the cavity of horse and ox ; DEUPSER. *Trichocephalus*, in liver of an ox, CAPARINI. *Filaria* in heart and lungs of Chinese horses and oxen, FAUYEL. *Strongylus* of heart and lungs of dog ; RAILLIET & CADIOT (2). *F. immitis* and others in Japanese dogs ; JANSEN & TOKIWA. Unsuccessful attempts to transmit *Strongylus vasorum* from one dog to another ; RAILLIET & CADIOT (1). *Esophagostoma columbianum*, CADIOT. *Strongylus colubiformis*, and *Spiroptera verrucosum*, n. spp., in liver of sheep ; GILES (3) and (4). Ascarids in liver of pigs ; ORTMANN. *Strongylus rubidus* in stomachs of American pigs, and its effect

HASSALL & STILES. Frequency of *Strongylus* in rabbits; RAILLIET (7). *Trichocephalus* (♀ only) in intestine of ferret, resembling the *T. depressiusculus* of the dog. *Echinorhynchus bullosus*, n. sp., in *Cystophora proboscidea*; v. LINSTOW (4). *E. novella*, n. sp., in bat; PARONA (2). *E. hamanni*, n. sp., in *Stenorhynchus (Ogmorhinus) leptonyx*; v. LINSTOW (4).

### c. Birds.

*Filaria serrata*, n. sp., in *Circus cyaneus hudsonensis*, *Echinorhynchus rectus*, n. sp., in *Larus*, sp. ?; LINTON (1). *Trichosoma rubrum*, n. sp., in *Spizilla socialis*; LINTON (3). *Sclerostomum apiostomum*, in *Macacus cynomolgus*; WILLACH. *Heterakis monticelliana*, n. sp., in *Otis tarda*; STOSSICH (4). *H. perspicillum*, in *Numida meleagris*, *H. papillosa*, in three other birds; RAILLIET & LUCET (2). In domestic fowl, *H. brasiliensis*, n. sp.; MAGALHÃES (1, II). In fowl's egg, *Ascaris inflexa*; FOREL.

### d. Reptiles.

In the venom organ of the common rattlesnake, a viviparous species of Nematode; TUTTLE. *Oxyurus longicollis*, Schm., in *Testudo nemoralis*, development; JAMMES (2).

### e. Fish.

Ten species of *Echinorhynchus*, and the fish they inhabit, including *E. thecatus* and *E. attenuatus*, n. spp. (in *Roccus americanus* and *Accipenser brevirostris* respectively); LINTON (4). Hosts of *E. proteus*, ZSCHOKKE, intermediate hosts shown, one to be a fish, the other a *Gammarus*, when there are two, though either of these apparently will serve alone.

### f. Arthropods.

*Filaria recondita* in *Pulex* of dog, its intermediate host shown to be either the *Pulex* of dog or man, or *Rhipocephalus sculus* of dog; CALLANDRUCCIO. *Gordius pustulosus* occurring abundantly in *Blaps mucronata*, also found in *Sphodrus leucophthalmus*, *Harpalus aeneus*, several species of *Amara*, several kinds of spiders, and in *Oniscus murarius*: only one host shown to be necessary, as the development of the egg to past the larval stage goes on in damp earth; CAMERANO (1). *Gordius doria*, n. sp., in an *Acanthodis*; CAMERANO (3). A *Gordius* in *Epinephelus tithonus*; FOWLER. *Nectonema agile*, ? with a Crustacean as intermediate host; WARD. *Gammarus* ? as intermediate host of *Echinorhynchus proteus*; ZSCHOKKE. *Liparis steineni* with *E. sp.* ?, and *Notothenia corriceps* with *E. megarrhynchus*, n. sp.; v. LINSTOW (4). An *Anguillula* in larva of *Asynapta citrina*; KIEFFER. A *Mermis* larva in *Chironomus*; TEYBOM. *Bradynema rigidum* in *Aphodius functarius*; STRASSEN.



## 17. METHODS.

For killing Nematodes for sections : corrosive sublimate + 70 % alcohol + a few drops of 5 % acetic acid, added while rolling the Nematode between two slides, recommended ; STILES (11) : for mounting *Trichina* ; PRESTON : for staining and preparing embryos of Nematodes ; NABIAS & SABRAZÉS, CALLANDRUCCIO, WANDOLLEK, and STRASSEN, p. 701 : for histology of the adult ; STRÖSE, JAMMES : for histology of *Nectonema* ; WARD, pp. 136 & 137 : of the *Acanthocephala* ; KAISER (1) : for preserving *Sagitta* ; CUNNINGHAM.

## B.—FAUNISTIC.

## 1. PARASITIC FORMS.

[*Gordius* is placed with the non-parasitic forms.]

General remarks on distribution of Land Nematodes ; STOLL.

Geographical distribution of *Filaria sanguinis hominis* ; MANSON : its absence in China ; FAUVEL. Geographical distribution of *Tylenchus devastatrix* ; BOS (3).

Denmark : *Trichina*, FRIIS. Mecklenburg : 16 genera and 35 species of Nematodes, 13 species of *Echinorhynchus* ; BRAUN (5). S. Italy : *Ankylostoma* ; CONSALVI. Venice : other Nematodes ; STOSSICH (3). Trieste : new species of *Heterakis* ; STOSSICH (4).

Japan : *Filaria immitis* and other parasites of dog ; JANSON. China : a *Filaria* fatal in horses and dogs, *Ascaris lumbricoides* in man ; FAUVEL. India : Nematodes of sheep and horses ; GILES (1), (2), (3), and (4).

Porto Rico : *Echinorhynchus novellæ*, n. sp., PARONA.

Brazil : *Heterakis brasiliensis*, n. sp., in fowl ; MAGALHÃES.

S. Georgia : *Ascaris osculata* (which hitherto only found in Arctic regions), two other *Ascarids*, 3 new species and 1 sp. ? of *Echinorhynchus* ; V. LINSTOW (4).

## 2. NON-PARASITIC FORMS.

N. Atlantic Ocean : geographical distribution of *Chaetognatha* ; STRODTMANN. Devonshire Coast : *Spadella cephaloptera* ; GARSTANG (1). Bergen : *Enoplidæ* ; APPELÖF.

Bohemia : pond Nematode ; FRITSCH & VÁVRA.

Sardinia : *Gordius villoti*, *aquaticus*, *tolosanus*, and *pustulosus* ; MARCIALIS.

Burma : *Gordius doriae*, n. sp., and *G. villoti*, *rosa*, and *sphaerurus* ; CAMERANO (3). Sumatra : *G. weberi* and *G. sumatrensis*, n. spp., VILLOT (2). Engano : *G. modigliani*, n. sp., CAMERANO (5).

S. America.—Venezuela : *G. aeneus*, CAMERANO (2). Parana (Palmeira) : *G. paranensis*, n. sp., CAMERANO (4).

S. Georgia : *Leptosomatum antarcticum*, n. sp., *L.* sp. ? (♀ only), *Monhystera* sp. ? (♀ only or immature), *Oncholaimus* sp. (♀ only), *Euchromadora* sp. ? (immature only) ; V. LINSTOW (4).

## C.—SYSTEMATIC.

## 1. NEMATODA, INCLUDING MERMITHIDÆ AND GORDIIDÆ.

*Angiostomum macrostomum*, notes on larva ; v. LINSTOW (3).

*Anguillula* parasitic in larva of a *Cecidomyiid* fly ; KIEFFER.

*Aphelenchus* as cause of a leaf disease ; ATKINSON. *A. olesistus*, n. causing disease in *Begonias* ; BOS (2).

*Ascaris* : subcuticular layer ; JAMMES (1) : muscle and nerve ; ROY (1, 1) : muscle, BÜTSCHLI : nervous system, HESSE : origin of Gon BOVERI : Centrosomes, LEBRUN. *A. ensicaudata*, *scombrorum*, h. STOSSICH (4). *A. scombrorum*, n. sp., STOSSICH (4). *A. pistichi*, n. sp., larva, v. LINSTOW (3). *A. osculata*, Rud., and 2 o species in S. Georgia ; v. LINSTOW (4). *A. inflexa*, specimen in h egg ; FOREL. *A. lumbricoides* in man, in China ; FAUVEL.

*Bradydema rigidum*, v. Sieb., anatomy, histology, &c. ; STRASSEN.

*Dispharagus aduncus*, hosts ; STOSSICH (4). *D. spiralis* at Venice, n on ; STOSSICH (3).

*Euchromadora* sp.? (immature) from S. Georgia ; v. LINSTOW (4).

*Filaria sanguinis hominis*, *perstans* and *diurna* ; MANSON, SIMM SLAUGHTER : description of embryos ; NABIAS & SABRAZÉS (1) (2) : absence in China ; FAUVEL. *F. bancrofti* ; v. LINSTOW (1 distinguished from *F. immitis* ; MEGALHÃES (2). *F. immitis* METER : in dogs of Japan, JANSON. Discovery of male of *F. meensis* ; CHARLES : of another *Filaria* (in the ass) ; RAILLIE MOUSSU. *F. papillosa*, life-history ; DEUPSER. *F. recondita* and *immitis* (?), description of embryo and larva ; CALANDRUCIO. *F. cervina* and *F. equina*, fresh diagnoses ; STILES (2). *F. apapilphala*, n. sp., CONDORELLI (2). *F. ephemeridarum* and *gamn* n. spp., v. LINSTOW (3). *F. serrata*, n. sp., from intestine of *Cyaneus hudsonius* ; LINTON (1). *F. ninni*, n. sp., STOSSICH (3). *rigidum*, v. Sieb., = *Bradydema rigidum*, n. g. ; STRASSEN.

*Gordius*, muscles and their development in 2 species ; ROHDE (1, III) *Gordius* parasitic in *Epinephale tithonus* (♀) ; FOWLER. *G. pustul* parasitism and development ; CAMERANO (1). *G. tolosanus*, 1 larva ; v. LINSTOW (3). *G. weberi* (intermediate between *Gors. str.*, and *Chordodes*) and *G. sumatrensis* (belonging to *Chordodes* group), n. spp., Sumatra, VILLOT (2). *G. modigliani* (belonging to *Chordodes* group), n. sp., Engano, CAMERANO (5). *G. paranensis*, 1 Palmeira, CAMERANO (4). *G. doriae*, n. sp., in an *Acanthodis*, Bu CAMERANO (3). *G. aeneus*, Villot, from Venezuela, and 1 S. American species, anatomy ; CAMERANO (2).

*Heterakis* : remarks on the genus ; RAILLIET & LUCET (2) MAGALHÃES (1, II). *H. perspicillum*, in small intestine of *Nyctaleagris* ; *H. papillosa* in three other birds ; RAILLIET & LUCET *H. brasiliensis*, n. sp., in domestic fowl ; MAGALHÃES (1, II) ; *H. alliana*, n. sp., in intestine of *Otis tarda* ; STOSSICH (4).

*schachtii*, chiefly in its relation to economics ; CHATIN, FE

- Hystrichis tricolor*, in Venice, notes on ; STROSSICH (3).  
*Leptosomatum antarcticum*, n. sp., and a sp. ? (♀ only) from S. Georgia ;  
 v. LINSTOW (4).  
*Mermis*: muscle and nerve compared with that in *Amphioxus* ; ROHDE  
 (1, 11). *M. nigrescens*, anatomy, histology, and life-history ; v. LINSTOW  
 (5). *M. albicans*, larvæ in *Chironomus* ; TRYBOM. *M. crassa*, v. L.,  
*M. gammari*, and *M. sialidis*, n. spp., larvæ ; v. LINSTOW (3).  
*Monhystera*, sp. ? (♀ or immature), from S. Georgia ; v. LINSTOW (4).  
*Myzomimus scutatus*, detailed anatomy, with mention of individual varia-  
 tions ; STILES (1).  
*Nectonema agile*, detailed anatomy, pp. 143-177; discussion on anatomy,  
 pp. 177-182 ; its relations to *Gordius*, pp. 182-188 ; its taxonomy,  
 pp. 137-139 ; WARD, Bull. Mus. C. Z. xxiii.  
*Nematodum gamasi*, n. sp., larva ; v. LINSTOW (3).  
*Oesophagostoma columbianum*, described and shown to be cause of nodular  
 disease of intestine of Indian sheep ; GILES (3).  
*Oncholaimus*, sp. ? (♀ only), from S. Georgia ; v. LINSTOW (4).  
*Oxyurus longicollis*, early stages in development ; JAMMES (2).  
*Rhabdonema*, disease caused by ; SOMSINO (3).  
*Sclerostomum tetracanthum*, life-history ; GILES (1). *S. robustum*, n. sp.,  
 in mules, and remarks on the other species in equine animals ;  
 GILES (2). *S. apioatomum*, parasitic in nodules of colon of *Macacus*  
*cynomolgus* ; WILLACH.  
*Spiroptera verrucosa*, n. sp., in Indian sheep ; GILES (4).  
*Strongylus convolutus*, anatomy and life-history ; STADELMANN. *S.*  
*micrurus*, histology ; STRÖSE. *S. paradoxus*, embryonic development ;  
 WANDOLLECK. *S. rubidus*, in stomach of pigs ; HASSELL & STILES.  
*S. vasorum*, and other species, in dog ; RAILLIET & CADIOT (1) and  
 (2). *S. colubriformis*, n. sp., in sheep ; GILES (4). *S. curticii*, n. sp.,  
 name proposed for Curtice's *S. ventricosus*, to distinguish it from  
 Rudolph's ; GILES (4).  
*Syndesmis echinorum*, parasitic on Echinus ; MATZDORF (3).  
*Trichocephalus* in the intestine of a ferret, ♀ only found, resembling  
*T. depressiusculus* of dog ; RAILLIET (2, VIII). *T.* in liver of an ox ;  
 CAPARINI (1, I).  
*Trichosoma rubrum*, n. sp., in thoracic cavity of the Chipping Sparrow ;  
 LINTON (3). *T. bombinatoris*, n. sp., larva ; v. LINSTOW (3).  
*T. verrucosum*, n. sp., GILES (4), afterwards referred to *Spiroptera*.  
*Tylenchus devastatrix*, and its ravages on plants ; FREEM, Bos (3) : its  
 occurrence in a Sphæriaceous plant ; NIEL. *T. invalis* of Edelweiss ;  
 MASSALONGO. *T. fucicola*, n. sp., parasitic on *Fucus* ; DE MAN.

## 2. ACANTHOCEPHALA.

Monograph of group ; HAMANN (2), KAISER (1): *Nephridia* ; K.  
 HAMANN (3) distinguishes 3 families, viz. :—

1. *Echinorhynchida*, g. *Echinorhynchus*, for *E. p.*  
*polymorphus*.



2. *Gigantorhynchida*, g. *Gigantorhynchus*, for *G. echinodiscus*, *tæniorides*, *spira*, and ? *E. gigas*.
3. *Neorhynchida*, g. *Neorhynchus*, for *N. claviceps*, *N. agilis*, and others.

*Echinorhynchus proteus*, development and life-history ; ZSCHOKKE (1).  
*E. teres*, anatomy and distribution according to hosts ; STOSSICH (4).  
*E. lanceolatus*, from Venice, notes on ; STOSSICH (3). *E. polymorphus* and *E. proteus*, larvae ; v. LINSTOW (3). *E. polymorphus* and *E. filicollis* distinguished ; BRAUN (5). *E. novella*, n. sp., from a S. American bat ; PARONA (2). *E. hamanni*, remarkable n. sp. (from *Stenorhynchus leptonyx*), with anterior part of body apparently serving as a sucker. *E. bullosus* (from *Cytophora probiscoidea*), *E. megarhynchus* (from *Notothenia corniceps*), n. spp., and *E. sp.* ? (from *Liparis steineni*), all from S. Georgia ; v. LINSTOW (4). *E. rectus*, n. sp., from a lark ; LINTON (1). *E. thecatus* in *Roccus americanus*, and *attenuatus* in *Accipenser brevirostris*, n. spp. ; LINTON, (4) pp. 528 & 529, with remarks on the following other species in fish. *E. acus*, p. 525, *E. pristis*, p. 530, var. *tenuicornis*, p. 531, *E. incrassatus*, *agilis*, *serrani*, *sagittifer*, *carchariae*, *proteus*, pp. 532-537. (*E. globocaudatus*), Zeder, = *E. tuba*, Rud. ; CONDORELLI (3).

### 3. CHÆTOGNATHA.

Systematic and general monograph, with 2 tables for determining the species ; STRODTMANN. 3 genera are distinguished, viz.:—*Sagitta*, with 11 spp. ; *Krohnia*, with 2 ; and *Spadella*, with 7.

Development of *Sagitta*, JOURDAIN, M. S., leading to the suggestion that, with *Amphioxus* and *Ascidians*, *Sagitta* would form a group, which may be called the "Protovertebrata."

*Spadella cephaloptera*, on Devonshire Coast ; GARSTANG (1).

## V.—ROTIFERA (including GASTROTRICHA).

### A.—BIOLOGICAL.

#### 1. GENERAL.

BERGENDAL (3) gives an important monograph on the Rotifers of Greenland, dealing fairly fully with the anatomy of 82 species, belonging to 42 genera, found there. Although the number of species is large, the number of individuals is comparatively small. The chief characteristic of the fauna is the rarity of the *Rhizota*, except for *Floscularia*, and of the *Tubicolaria*, which are groups with an otherwise almost universal distribution.

WIERZEJSKI (3) gives a general account of the Rotifers of Galicia, dealing with their anatomy, development, &c., with the collecting of

them, and their taxonomy. COSMOVICI (2) gives the anatomy of the Roumanian Rotifers, comparing them with those of Galicia.

Anatomy and histology of *Atrochus tentaculatus*, n. g. & sp. of Rotifer, without a wheel-organ; WIERZEJSKI (4). Description of a new species of *Pedalion* (*P. fennicum*), from Finland, with no glandular posterior haired papillæ; LEVANDER. Anatomy and histology of *Gastroschiza tricantha*, n. g., and type of a new family, of Rotifers, including the *Euchlanis lynceus* of Ehrenberg; BERGENDAL (4): of *Anapas ovalis*, n. g. & sp., belonging to the same family, with carapace like *Gastroschiza*, but with no foot; BERGENDAL (4).

## 2. NERVOUS SYSTEM AND SENSE ORGANS.

Exhibition of suboesophageal ganglion: ZELINKA. Sense of vision; ROUSSELET (4), where it is shown, by experiment, that Rotifers appear to see well even close objects.

## 3. REPRODUCTION, &c.

Remarks on the males and winter eggs of Rotifers; BERGENDAL, (3) Act. Lund. iii, pp. 130-149. The male of *Notops clavulatus* and of *Triphylus lacustris* found; WESTERN.

## 4. CLASSIFICATION, &c.

VETTER doubts (though no reasons are given) the relationship between Rotifers and the Trochosphere larva. DADAY revises the species of *Asplanchna*, with special reference to the Hungarian forms, concluding that the "reserve jaws," not being part of the real jaw apparatus, are of no importance in classification, but that the external form of both sexes, the shape of the real jaws, the external form of the ovary, and the shell of the winter eggs are of classificatory importance. His species are, however, criticized by WIERZEJSKI (2).

## 5. HABITS, &c.

Occasional parasitism of a species of *Proales* on *Daphnia*; THOMPSON, P. G. (2). Commensalism of 2 new species, one of *Callidina* and one of *Pterodina*, on *Asellus*; PARSONS. *Discopus synaptæ*, Zel., as an Echinoderm parasite; CUÉNOT, MATZDORF (3). Moss-haunting Rotifers, 2 new species of *Macrotrachela*; THOMPSON, P. G. (1).

## METHODS.

Of collecting; WIERZEJSKI (3): of examining under the microscope; ROUSSELET (1).

## B.—FAUNISTIC.

Distribution of Rotifers according to saltness of water ; COSMOVICI (1) & DADAY, E. (1). Daday concludes that there are only 28 purely marine species, 32 both marine and lacustrine, 6 also in inland salt lakes ; he does not deal with the purely freshwater forms ; and he is altogether accurate in the forms whose distribution he does deal with. IMHOF (1) also deals with the distribution of the same kind of Rotifers and concludes that of the marine and brackish forms, 9 species occur in the Baltic, 25 in the North Sea (23 not yet observed elsewhere), 1 in the Irish Sea, 7 in the Mediterranean ; he records 40 species of Euryhyali forms, *i.e.* : forms which inhabit both sea- and fresh-water. IMHOF (1) gives a summary of the pelagic fresh-water Rotifera, concluding that there are 29 species, and 1 variety of them ; in speaking of the life of fresh seas, IMHOF (2) mentions 3 species of Rotifers, all belonging to the genus *Anuraea*. BERGENDAL (3) gives a detailed account of the Rotifer fauna of Greenland, comparing it (pp. 150–163) with that of other regions. LEVANDER (2) enumerates the Rotifers of the South of Finland, mostly fresh-water ones, but 18 salt-water species occur off Esbo.

## ARCTOGEEAL REGION.

## a. Arctic Zone.

Greenland : 82 species and 42 genera, including 3 new genera, 2 new subgenera, each with 1 new species, and 18 other new species ; freshwater chiefly, but a few marine ; BERGENDAL (3).

Iceland : Pelagic Rotifer of Dyrefjord (*Synchaeta pectinata*) POUCHET. Freshwater Rotifera, 2 species (mentioned only) ; GUERNE & RICHARD.

## b. Palæarctic Zone.

Baltic Sea : 9 species, both marine and brackish ; IMHOF (1). Baltic : 40 species ; KOJEVNIKOV.

Circum-Baltic Region.—Finland : a new species of *Pedalia* LEVANDER (1). Other Rotifers ; LEVANDER (2). Bornholm (?)—"Rön Mölla"—and Stockholm ; 2 (or ? 3) species of the new genus *Gastrosch.* of which one is probably Ehrenberg's *Euchlanis lynceus*, and of which the other would probably serve as type of another new genus, *Anap.* BERGENDAL (4) & JÄGERSKIÖLD.

Norwegian.—Bukkenfjord : a new species of *Anuraea* ; THOMSON, J. C.

North Sea : 25 species, of which 23 not found elsewhere ; IMHOF.

Scotland.—Forfarshire : a new species of *Notops*, and 2 rare species, one of *Copeus*, and the other *Triarthra* ; CALMAN. A few miles north : 2 new species of *Floscularia* ; HOOD (1) & (2).

England.—Essex: new species of *Macrotrachela*; THOMPSON, P. G. (1). Chingford: ♂ of *Triphylus lacustris*; WESTERN. Leytonstone: new species of *Proales* on *Daphnia*; THOMPSON, P. G. (2). Epping Forest: new species of *Notops*, ROUSSELET (2): 2 new species, PARSONS. 3 new species of Macrotrachelous *Caludinidæ*; BRYCE (1). Keston: 2 new species, ROUSSELET (3). Surrey, Richmond Park: ♂ of *Notops clavulatus*; WESTERN. Middlesex: List of Rotifers in ponds near Ealing; LEWIS. Sussex: new species of *Macrotrachela*; THOMPSON, P. G. (1). Isle of Wight: 3 new species; BRYCE (1).

Central Europe.—Switzerland: list of Rotifers; IMHOF (3). Tyrol: *Stephanoceros eichornii*; DALLA-TORRE. Württemberg: Rotifer fauna, 117 species; BILFINGER. Bohemia: 4 pelagic pond forms, 2 semipelagic, and 10 littoral; KAFKA. Unter-Pocernitz: pond with 9 Rotifers. Gattersschlag: pond with 13 Rotifers and a *Gasterotricha*. Hungary: 13 species belonging to the genera *Asplanchna*, *Brachionus*, and *Triarthra*; DADAY, J. Hungarian representatives of genus *Asplanchna*, 9 species; DADAY, E. (2). Galicia: 2 new genera, each with 1 new species, and 6 other new species; WIERZEJSKI (3). Roumania: 23 species and 15 genera, 3 species new; COSMOVICI (2).

Mediterranean: 7 species; IMHOF (1). Black Sea: *Synchaeta baltica*, Ehr.; PÉRIASLAVZEFF.

### c. Nearctic Zone.

United States.—L. Michigan: *Rotifer elongatus*; KELLICOTT. Cincinnati: Rotifer fauna, including 6 new species; TURNER.

## NEOTROPICAL REGION.

Argentina: Freshwater Rotifers; WIERZEJSKI (2).

## ETHIOPIAN AND ORIENTAL REGIONS.

[None.]

## AUSTRALIAN REGION.

Victoria: Rotifer fauna—6 species of *Floscularia*, of which 1 new; 11 species of the *Meliceritids*, of which 2 (♂ 3) new, and 1 new variety; 4 *Philadissids*; 2 *Asplanchnids*; 3 *Synchaetids*; 2 *Triarthrids*; 4 *Notomastids*; 1 *Rattulid*; 1 *Dinocharid*; 2 *Salpinids*; 1 *Euchlanis*; 3 *Cathygnids*, of which 2 new; 1 *Colurid*, which new; 2 *Pterodinids*, of which 1 new; 3 *Brachionids*; 2 *Anuraeids*.

## C.—SYSTEMATIC.

*Actinurus neptunus*, Ehr., Roumania, anatomy; COSMOVICI (2).  
*Anapae ovalis*, n. g. & sp., Scandinavia; BERGENDAL (4).

*Amuræa cruciformis*, n. sp., Bakkenfjord, THOMPSON, J. C. ; 3 species frozen seas, IMHOF (2) ; *A. sp. ?* in ponds of Iceland, DE GUERNE RICHARD. *A. cochlearis*, var. *carinata* : notes on distribution LEVANDER, (2) p. 142.

*Arthroglæna*, n. subg. of *Diglena*, with *A. lütkeni*, n. sp., Greenland BERGENDAL (3).

*Asplanchna* : 9 Hungarian species recognized and described, synonymy each given, and also a table for determining the species ; DADAY (2). DADAY, J., also mentions some Hungarian forms. *A. herri* Guerne, description ; DADAY (2), WIERZEJSKI (2). *A. girodi*, Guerne description ; WIERZEJSKI (2) : and, under the name of (*A. syri* DADAY (2). *A. helvetica* in Iceland, DE GUERNE & RICHARD shown to = (*A. kraemeri*), Guerne, which = *A. priodonta*, well described ; WIERZEJSKI (2) and DADAY (2). *A. sieboldii* in Hungary ; DADAY (2) : broken up into *A. ebbesborni* and *A. brightwelli* by WIERZEJSKI (2), both of which also described by DADAY (2). *A. imhofi*, Guerne, belong to either *A. ebbesborni* or *A. brightwelli* WIERZEJSKI (2), and DADAY (2). *A. triophthalma*, Dad., amphipod Huds., and *intermedia*, Huds., recognized by DADAY (2) as Hungarian species, but said not to be good species by WIERZEJSKI (2). *A. cinnatus*, n. sp., TURNER.

*Atrochus*, n. g., with *A. tentaculatus*, n. sp., Galicia, WIERZEJSKI (4) anatomy and histology ; WIERZEJSKI (4).

*Bipalpus*, n. g., with *B. vesiculosus*, n. sp., and including as another species the *Euchlanis lynceus*, Ehr. ; WIERZEJSKI (3). In a paper (3) he shows that they = *Gasteroschiza flexilis* and *G. faveolata* Jägerskiöld, respectively.

*Brachionus* : Hungarian species ; DADAY, J. *B. n. sp. ?* (or = *B. amurensis*, Ehrb., which is a variety of *B. pala*), Roumania ; COSMOPOLOU (2). *B. tuberculatus*, n. sp., Cincinnati ; TURNER.

*Callidina* : Macrotrachelous forms (i.e., those which when fully extended have the post anal-portion decidedly shorter than the pre-intestine) 21 species recognized, of which 19 British, 4 new species, *C. plinthis* (Epping Forest and I. of Wight), *lata* (I. of Wight and Folkestone), *spinosa* (I. of Wight), and *aspera* (Epping Forest), fully described by BRYCE (1). *C. laevis*, *C. tentaculata*, n. spp., and *C. sp. ?*, N. Greenland ; BERGENDAL (3). *C. magna-calcarata*, n. sp., commensal with *Asellus*, Epping Forest ; PARSONS.

*Cathypra*, n. sp. (allied to *C. luna*), Victoria ; ANDERSON & SHEPHERD. *C. leontina*, n. sp., Cincinnati, TURNER.

*Celoxys similis*, n. sp., Galicia, described and figured ; WIERZEJSKI (4). *Conochilus unicornis*, n. sp., Keston, ROUSSELET (3).

*Copeus ehrenbergi*, Gosse, in Forfarshire ; CALMAN.

*Diglena ? natans*, n. sp., Greenland, BERGENDAL, (3) pp. 94 & 107.

*Dinocharis intermedia*, n. sp., Greenland, BERGENDAL, (3) pp. 94 & 107.

*Diopatra*, n. g., of *Notommatidae*, with *D. marina*, n. sp., Greenland ; BERGENDAL, (3) p. 94.

- Discopus synaptæ*, Zel., as an Echinoderm parasite ; MATZDORF (3), CUÉNOT.
- Distemma dubia*, n. sp., Greenland, BERGENDAL, (3) p. 100.
- Distyla* : notes on genus ; LORD. *D. clara*, *agilis*, *inermis*, n. spp., British, BRYCE (2). *D. ichthyoura*, n. sp., Victoria, ANDERSON & SHEPHARD.
- Euchlanis parva*, n. sp., Keston, ROUSSELET (3). *E. elegans*, n. sp., Galicia, description and figure ; WIERZEJSKI (3). (*E. lynceus*), Ehrb., belong to *Gasteroschiza*, n. g., BERGENDAL (4), followed by JÄGERSKIÖLD : belong to *Bipalpus*, n. g. ; WIERZEJSKI : Bergendal found it at Rönne-Mölla, Jägerskiöld, near Stockholm, and Wierzejski in Galicia, all independently, and at about the same time.
- Floscularia gossii*, n. sp., Stormont Loch, Blairgowrie, occurring on *Chara fatida* ; HOOD (1). *F. quadrilobata*, n. sp., from a pond also a few miles N. of Dundee, attached to *Ranunculus* and *Nitella* ; HOOD (2). *F. evansonii*, n. sp., Victoria, ANDERSON & SHEPHARD. *F. uniloba*, n. sp., Galicia, WIERZEJSKI (3).
- Gasteroschiza*, n. g. for *G. triacantha*, n. sp., Rönne Mölla, which allied to or ? = (*Euchlanis lynceus*), Ehrb. ; BERGENDAL (4). *G. faveolata*, n. sp., near Stockholm, and *G. triacantha*, Berg. ; JÄGERSKIÖLD. *G. flexilis*, n. sp., near Stockholm, JÄGERSKIÖLD, = ? *Anapas ovalis*, n. g. & sp., BERGENDAL (4). [See also under *Bipalpus*.]
- Gastrotricha*, in Bohemia ; FRITSCH & VÁVRA.
- Hypopus*, n. g. of *Notammatidæ*, with *H. ritenbenki*, n. sp., Greenland ; BERGENDAL, (3) p. 45.
- Lucinularia reticulata*, n. sp., Victoria ; ANDERSON & SHEPHARD.
- Limnias*, sp. ?, allied to *L. granulosus*, Victoria ; ANDERSON & SHEPHARD.
- Macrotrachela multispinosa* and *papillosa*, n. spp. from moss ; THOMPSON, P. G. (1).
- Mastigocerea capucina*, n. sp., Galicia, WIERZEJSKI (3) and (4).
- Metopidia affinis*, n. sp., Greenland, BERGENDAL, (3) p. 122. *M. elliptica* and *dentata*, n. spp., Cincinnati, TURNER. *M. ovalis*, n. sp., Victoria, ANDERSON & SHEPHARD.
- Mikrocodides*, n. g., with *M. dubius*, n. sp., Greenland, BERGENDAL, (3) p. 34.
- Monostyla quennerstedti*, n. sp., Greenland, BERGENDAL, (3) p. 118. *M. truncata*, n. sp., Cincinnati, TURNER. *M. tentaculata*, n. sp., Roumania, COSMOVICI (2). *M. bifurca* and *galeata*, n. spp., British, BRYCE (2).
- "*Notholca*" *ambigua*, n. sp., Greenland, BERGENDAL, (3) p. 123.
- Notholca equispinata*, n. sp., Roumania, COSMOVICI (2).
- Notommata tarda*, *grönlandica*, *celer*, *distincta*, *longipes*, n. spp., Greenland, BERGENDAL, (3) pp. 55-66.
- Notops clavulatus*, ♂ found in Richmond Park ; WESTERN. *N. minor*, n. sp., Epping Forest ; ROUSSELET (2). *N. pygmaeus*, n. sp., Forfarshire, CALMAN.
- Notostemma*, n. subg. of *Notommata*, with *N. makrocephala*, *affinis*, *bicarinatu*, n. spp., Greenland ; BERGENDAL, (3) pp. 69-71.
- Oecistes serpentina*, Roumania, anatomy ; COSMOVICI (2). *O. wilsoni*,

- 1 sp. and 1 sp. of *H. submarginatus*, TERNER: ANDERSON  
 THYPLIN.
- Thyphlocyba* 1 new species? *Thyphlocyba*, from Birmingham; only four  
 collected from 3 others, mostly in this form, but no glandular pro-  
 cesses, and the head processes are not  
 usually not the segments are joined in them; LUTHER 1.
- Thyphlocyba* TERNER. *Thyphlocyba*: CANNON 12.
- Thyphlocyba* TERNER 1 sp. *Thyphlocyba* BERNARDI (3, p. 54).
- Thyphlocyba* BERNARDI in the genus *Thyphlocyba* BERNARDI of the genus, a  
 description of a new species from Texas, *Thyphlocyba*; THOMPSON  
 2 1 2.
- Thyphlocyba* TERNER 1 sp. living abundantly in London, Epping Forest  
 TERNER. *Thyphlocyba*, 1 sp. *Thyphlocyba*, description and figure  
 WIEZELSKI (3). *Thyphlocyba*, 1 sp. *Thyphlocyba*, ANDERSON  
 THYPLIN.
- Thyphlocyba* TERNER 1 sp. *Thyphlocyba*: KELLER 12.
- Thyphlocyba* *Thyphlocyba* 1 sp. *Thyphlocyba* BERNARDI (3, p. 111).
- Thyphlocyba* BERNARDI 2, *Thyphlocyba*, description and figure; WIEZELSKI (3).
- Thyphlocyba* *Thyphlocyba* 1 sp. *Thyphlocyba*, description and figure: WIEZELSKI (3).
- 1 *Thyphlocyba* TERNER, in the Black Sea; PETERSEN. *Thyphlocyba* section  
 TERNER, is a prominent pale form of *Thyphlocyba*, Iceland, a  
 description in 1: PETERSEN.
- Thyphlocyba* TERNER, 1 sp. *Thyphlocyba* BERNARDI (3) p. 48.
- Thyphlocyba* BERNARDI species: DADAY (7). *Thyphlocyba*, Plate, in P.  
 CANNON CANNON.
- Thyphlocyba* TERNER, 2 found in Chingford; WESTER.

## VI.—MESOZOA.

FREYER's papers of last year on *Salinella*, translated into English  
 AND N. H.

STRAITH (1) gives a summary of the different theories with regard  
 the derivation of the *Mete* from the *Protozoa*, and deals especially with  
*Salinella* as a connecting link. APATHY also concludes that the  
 between the *Mete* and *Protozoa*, between *Trichoplas* and *Volvox*, is a  
 factorily filled by *Salinella*.

## XVI. CŒLEENTERATA.

BY

SYDNEY J. HICKSON, M.A., D.Sc.

## I.—LIST OF PAPERS.\*

1. ALCOCK, A. A case of Commensalism between a Gymnoblasic Hydro-medusoid (*Stylactis minoi*, n. sp.) and a Scorpœnoid Fish (*Minous inermis*). Ann. N. H. x, pp. 207-214, 1 cut.
2. ANGELIS, G. DE. Introduzione allo studio degli Antozoi fossili. Riv. Ital. Sci. Nat. xii, pp. 129-132, 141 & 142.
3. ANON. The Australian Barrier Reef. Notice of Mr. Saville Kent's book on "The Great Barrier Reef of Australia, 1893," with two photo-mezzotypes. Nat. Sci. 1892, pp. 646 & 647.
4. ANTIPA, G. Die Lucernariden der Bremer Expedition nach Ostspitzbergen im Jahre 1889. Zool. Jahrb. vi, pp. 377-390, 2 pls. Abstr. in J. R. Micr. Soc. 1892 (v), p. 623.
5. —. Ueber das Vorkommen von rudimentären "Principalentakeln" bei Lucernariden. T. c. pp. 392 & 393.
6. APPELLÖFF, A. Zur Kenntniss der Edwardsien. Bergens Mus. Aarsber. 1891, No. 6, 32 pp., 3 pls.
7. BIGELOW, K. P. On a new species of *Cassiopea (xamachana)* from Jamaica. Zool. Anz. xv, No. 393, pp. 212-214. Abstr. in J. R. Micr. Soc. 1892 (iv), p. 490.
8. —. On the development of the marginal Sense Organs of a Rhizostomatous Medusa (*Cassiopea xamachana*). Johns Hopk. Univ. Circ. xi, No. 97, pp. 84 & 85. Abstr. in J. R. Micr. Soc. 1892 (iv), pp. 490 & 491.
9. —. On Reproduction by Budding in the *Discomedusæ*. Johns Hopk. Univ. Circ. xi, No. 97, pp. 71 & 72. Abstr. in J. R. Micr. Soc. 1892 (iv), p. 491.

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\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.



10. BROOK, G. Preliminary description of (40) new species of *Madrepora* in the Collection of the British Museum. Ann. N. H. x, pp. 451-465. Abstr. in J. R. Micr. Soc. 1893 (iii), p. 336.
11. BRUNCHORST, J. Die Biologische Meeresstation in Bergen. Bergens Mus. Aarsber. 1890, No. 5.
12. CARLGREN, O. Beitrag zur Kenntnis der Edwardsien. Cfv. Ak. Förh. 1892, pp. 451-461, 6 figg. Abstr. in J. R. Micr. Soc. 1893 (ii), p. 195.
13. CERFONTAINE, P. Sur l'organisation et le développement des différentes formes des Anthozoaires. Bull. Ac. Belg. xxii, pp. 128-148, 1 pl.
14. CHUN, C. Die Diasogonie, eine neue Form der geschlechtlichen Zeugung. Leuckart's Festschr. pp. 77-108, 5 pls, 3 figg. in text.
15. CLAUS, C. Ueber die Entwicklung des Scyphostoma von *Cotylorhiza*, *Aurelia*, und *Chrysaora*, sowie über die systematische Stellung der Scyphomedusen. Arb. z. Inst. Wien, x, 1, pp. 1-70, 3 pls. Also published separately by Hölder, Vienna, 1892.
16. CUNNINGHAM, J. T. On a species of Siphonophore observed at Plymouth. J. Mar. Biol. Ass. ii, 1892, pp. 212-215, 2 figg. Abstr. in J. R. Micr. Soc. 1892 (iv), p. 491.
17. DRIESCH, H. Kritische Erörterungen neuerer Beiträge zur theoretischen Morphologie. II. Zur Heteromorphose der Hydroidpolypen. Biol. Centralbl. xii, pp. 545-556, 3 figg. Abstr. in J. R. Micr. Soc. 1892 (vi), p. 799.
18. GERD, W. Zur Frage über die Keimblätterbildung bei den Hydro-medusen. Zool. Anz. xv, No. 399, pp. 312-316, 5 figg. Abstr. in J. R. Micr. Soc. 1892 (vi), p. 800.
19. GÖTTE, A. Ueber die Entwicklung von *Pelagia noctiluca*. SB. Ak. Berlin, 1892, Heft vii, pp. 413-421.
20. GREGORIO, M. A. DE. Intorno a taluni Celenterati mediterranei viventi. Nat. Sicil. xii (3), pp. 74 & 75.
21. GREGORY, J. W. The Exploration of Coral Reefs by Borings. Nat. Sci. i, No. 1, pp. 50-52.
22. GRIEG, J. A. Oversigt over Norges Pennatulider. Bergens Mus. Aarsber. 1891, No. 1, 24 pp., 1 pl.
23. GURLEY, R. B. The Geological Age of the Graptolite Shales of Arkansas, and New Species of Graptolites. Ann. Rep. Geol. Survey Arkansas, iii (1890), pp. 401-404 & 416-418, 1 pl.
24. HACKER, V. Die Furchung des Eies von *Aequorea forskalea*. Arch. mikr. Anat. xl, pp. 243-263, 2 pls. & 5 figg. in text. Abstr. in J. R. Micr. Soc. 1892 (vi), p. 799.

25. HADDON, A. C. The newly-hatched larva of *Euphyllia*. Sci. P. R. Dublin Soc. vii, pp. 127-136, 1 pl. & 1 fig. in text. Abstr. in J. R. Micr. Soc. 1893 (i), pp. 53 & 54.
26. HARTLAUB, C. Zur Kenntniss der Anthomedusen. Nachr. Ges. Götting. 1892 (1), pp. 17-23, 3 figg. in text.
27. HICKSON, S. J. Preliminary notes of observations on the anatomy and habits of *Alcyonium*. P. Cambr. Phil. Soc. 1892 (vii), pt. 6, pp. 305-308. Nature, xlv, No. 1167, p. 455.
28. —. Notes on a small collection of *Hydrocorallinae*. Sci. P. R. Dublin Soc. vii, pp. 496-510, 3 pls. Abstr. in J. R. Micr. Soc. 1892 (vi), pp. 799-800.
29. —. Note on the female gonophores of *Errina labiata*. Zool. Anz. xv, No. 394, pp. 237 & 238. Abstr. in J. R. Micr. Soc. 1892 (v), p. 623.
30. —. Abstract of a paper entitled, "A Revision of the Genera of the *Alcyonaria stolonifera*." P. Z. S. 1892, pp. 594-596.
31. JAMES, J. H. Manual of the Palæontology of the Cincinnati group: *Cœlenterata*. J. Cincinnati Soc. 1892 (xiv), pp. 149-163, 1 fig.
32. KIRKPATRICK, R. Reports on the Zoological collections made in Torres Straits by Professor A. C. Haddon. *Hydroida and Polyzoa*. Sci. P. R. Dublin Soc. vi, pt. x, pp. 603-626, 4 pls.
33. KOCH, G. VON. Kleinere Mittheilungen über Anthozoen. 7. Über Kolonien von *Bebryce mollis*, Phil., welche Cornulariden ähnlich sind. 8. Aggregierte Kolonien von *Balanophyllia verrucaria*, Ant. Morph. JB. xviii, 2 hft., pp. 373-376, and 376-382, with 11 figg. Abstr. in J. R. Micr. Soc. 1892, pt. 3, p. 377.
34. —. Kleinere Mittheilungen über Korallen. 9. Beobachtung des Wachsens von *Clavularia ochracea*. Morph. JB. xviii, pp. 605-608, 1 fig. Abstr. in J. R. Micr. Soc. 1892 (vi), p. 799.
35. LANG, ALB. Ueber die Knospung bei *Hydra* und einigen Hydropolypen. Mit einem Vorwort von A. Weismann. Z. wiss. Zool. liv, pp. 365-385, 1 pl. Abstr. in J. R. Micr. Soc. 1892 (vi), pp. 801 & 802.
36. MAAS, O. Ueber Bau und Entwicklung der Cuninenknospen. Zool. Jahrb. v, pp. 271-300, 2 pls. Abstr. in J. R. Micr. Soc. 1893 (i), pp. 54 & 55.
37. NAGEL, W. Der Geschmackssinn der Actinien. Zool. Anz. xv, pp. 334-338. Abstr. in J. R. Micr. Soc. 1893 (i), p. 54.
38. ORTMANN, A. Ueber Korallriffe an der ostafrikanischen Küste. Zool. Anz. xv, No. 381, pp. 18-20. Translated in Ann. N. H. ix, pp. 339 & 340; copied in Naturwiss. Rundschau, vii, No. 15, p. 196. Abstr. in J. R. Micr. Soc. 1892 (iv), p. 490.

3. LANGE, A. Die Koralriffe von Looe-Island und Umgegend. Zool. Jahrb. v. 20 (1897), 1 map. Abstr. in J. R. Micr. Soc. 1902, p. 124 & 125.
4. — Bericht über die wissenschaftlichen Leistungen in der zoologischen zoologischen während des Jahres 1896. Arch. f. Nat. 5. Hft. 2, pp. 167-173.
5. LANGE, A. Vase und wenig bekannte Korallen. Abb. Zool. Anz. 20, 1897, 4 pls., and separately published by F. Vieweg, Hannover.
6. LANGE, A. Zur Histologie der Obolusporien. Arch. mikr. Anat. 20, 1897, 1 pl. Abstr. in J. R. Micr. Soc. 1892, p. 125.
7. LANGE, C. P. Eine geographische Beschreibung. Die Korallen von Looe-Island. Zool. Anz. xv, pp. 235 & 237. Abstr. in J. R. Micr. Soc. 1892, p. 124.
8. LANGE, V. Sur la vie de reproduction par fission chez *Asymmetra (Asymmetra) schenckii*. Act. Soc. Helv. xxiv, p. 1897.
9. TILLOTT, E. Jahresbericht für 1896 über die Coelenteraten. Ausw. der Spongiae und Actinien. Arch. f. Nat. lv, 1 Hft. 1, pp. 136-144.
10. — Die Actinien der Plankton Expedition. Ergeb. Plankton Exped. 20, pp. 4 pls., and 1 map.
11. WINKLER, A. [See LANGE, A.]
12. WINKLER, V. La digestion chez les Actinies. Zool. Anz. pp. 10-12. Vanderhaeghe, Gand: 1892, 8vo. Extract from *Soc. de Medec. Gand* 1892, pp. 295-306. Abstr. in J. R. Micr. Soc. 1892, p. 125.
13. ZONA, R. Die vitale Methylenblaufärbung bei *Hydra*. Zool. Anz. xv, No. 394, pp. 241 & 242.
14. —. Inverno ad alcune particolarità di Struttura dell' *Hydra*. Rend. Ist. Lombardo, xxv, pp. 700-712, 1 pl.

## II.—MORPHOLOGY.

### HYDROZOA.

LANG (35) describes the histology of the young buds of *Hydra*, *Adrenomedusa*, and *Plumularia*, and maintains that the ectoderm, and the ectoderm only, contributes to their formation. When a bud is about to be formed, the ectoderm of the parent thickens in a certain restricted portion of the body, by a process of rapid division by fission of the ectoderm. After a time some of these ectoderm cells wander through the mesoderm, and these cells eventually form the endoderm of

bud. The mesogloea of the parent in the area of the ectoderm thickening then breaks down, and is subsequently replaced by the formation of a new mesogloea by the young bud.

ZOJA (48) by the use of, comparatively speaking, strong solutions of methyl blue, has been able to clearly demonstrate the ectodermic nervous system of *Hydra*, confirming, in general details, the results arrived at by Schneider. He was able to prove the existence, in the ectoderm, of nerve nodules, from which numerous fibres spring, of nerve cords formed by the junction of several nerve fibres, and complicated networks of fine fibrils and rigid fibrils leading from this nervous system to the nematocysts. These points are illustrated by a coloured plate in the Rendiconti (49).

MAAS (36) describes a stock of *Cunina* buds which he obtained from the enteric cavity of *Geryonia*. The axis of the stock is not a simple tube, but possesses numerous irregular ramifications. The author is of opinion that a planula is produced sexually, and this settles down in the tissue of the *Geryonia*, and forms a stock which produces *Medusæ* by budding, in fact that there is a simple alternation of generations.

DRIESCH (17) gives an account of the different modes of growth in two forms of *Sertularella*. His investigations, he maintains, prove that there is in the hydroid colony no such substance as idioplasm. A polyp may give rise to another polyp, or a stolon to another stolon or a shoot, according to the physical or mechanical conditions that may be influencing it during its growth.

GERD (18) states that at an early stage in the development of the egg of *Bougainvillea*, there is a distinct segmentation cavity formed, but that this is soon obliterated by the growth, in a centripetal direction, of the cells of the coeloblastula. These cells increase in number by tangential division, and some of them wander into the cavity of the embryo. This process of migration ends in the formation of a solid morula (pseudo-morula), and at the time when this is formed the outlines of the cells are very difficult to determine. The mesogloea is formed subsequently, and then the "pseudo-morula" changes into a solid planula.

HICKSON (28) gives an account of a small collection of *Hydrocorallina* collected by Professor Haddon in Torres Straits. The collection consisted of several specimens, both dried and in spirit, of *Millepora murrayi*, *Distichopora violacea*, and a small specimen in spirit of *Stylaster gracilis*. An account is given of the anatomy of *Stylaster gracilis*, and there is a short discussion of the relations of the genus *Stylaster* to *Allopora*.

Several specimens of *Distichopora* were examined, and it was found that those of a yellow or orange colour were sterile, those of a purplish brown colour bore male gonangia, and those of a violet colour bore female gonangia. These facts seem to indicate either that the *Distichoporas* change colour at different stages in their growth, or that the colour is correlated with their sexual condition. In any case, it seems probable that many of the species that have been established on colour characters will have to be abandoned when their anatomy has been examined.

HICKSON (29) states that the wall of the female gonangium of *Errina*

*labiata* consists of two layers, one of ectoderm and one of endoderm in other Stylasterids previously described.

HÄCKER (24) gives a description of the early stages of the development of *Equorea forskalea*. The early stages are extremely regular, the nuclear divisions, up to the sixty-fourth stage, being simultaneous.

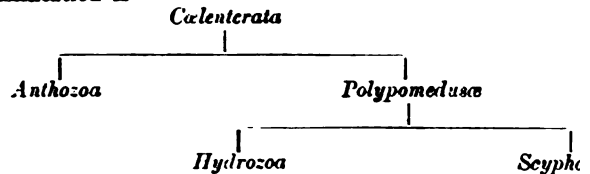
#### SCYPHOZOA.

CLAUS (15) gives an account of some new observations on the development of certain *Scyphozoa*, and discusses, very fully, the systematic position of this group. He found that the 16-armed larva of *Cotylorhiza* remained unchanged in the Zoological Institution at Vienna and at Tübingen all the winter and spring. The first changes that occurred began in June when buds were formed, not on the crown, but on the body-wall of the larva. Strobilisation began in August, and is limited to the formation of one ephyra at a time. In the early Scyphostoma stage, the mesogloea is a clear liquid lamella, composed of a substance very similar to the contents of the endoderm cells. It must be considered to be derived from the endoderm cells. This is in striking contrast to the origin of the mesogloea in *Aurelia*, where it is derived, according to Kowalewsky and Marion, from the ectoderm.

The inner layer of cells of the proboscis is endodermal. This confirms the views of McMurrich, and controverts those of Götte.

Claus states that Götte is also wrong in his account of the development of the septal funnels. There is no cavity in the septal muscles; the funnels do not become the sub-genital pits.

As a general conclusion from these researches, Claus maintains that *Scyphomedusæ* cannot be included in the group of the *Anthozoa*, and that the correct classification is—



GÖTTE (19) finds that, although there is no true Scyphostoma in the development of *Pelagia*, the general features of the development of these forms are very similar to those of *Aurelia* and *Cotylorhiza*. The points of difference are in the absence, in *Pelagia*, of larval tentacles and septal muscles.

While the whole inner structure and the course of radiation are the same as in other *Medusæ*, the rhythm of the formation of the enteric pouches and septa is somewhat different, and follows the following course:—

- 2 radials of the principal plane, endodermic.
- 2 " transverse " ectodermic.
- 4 adradials by division of the 2nd ectodermic pouches.
- 4 " " 1st endodermic "
- " " last ectodermic "
- ermic and 10 ectodermic pouches.

BIGELOW (9) states that, whereas the budding that takes place on any other part of the Scyphostoma than the crown in *Aurelia*, *Cyanæa*, and *Cotylorhiza* is a mere incident in the life-history of the individual, in *Cassiopea zamachana* the process of budding from the Scyphostoma is an important, if not the chief factor in the perpetuation of the species.

BIGELOW (8) states that Goette is wrong in asserting that the rhopalia are formed as evaginations from the under surface of the marginal part of the umbrella independently of the larval tentacles. In *Cassiopea zamachana*, at any rate, they are formed as modifications of one series of larval tentacles. Otoliths are formed at the base, and the distal portion of the tentacle is absorbed.

ANTIPA (4) found in an example of a very young *Craterolophus*, between the adradial arms, and therefore in the perradii and interradii, a small true tentacle. This is of importance, he considers, as it proves that the *Lucernariæ* are derived from a form which possessed 8 (4 per- and 4 inter-radial) tentacles.

#### ANTHOZOA.

APPELLÖFF (6) finds that there is a well-developed nervous system in the ectoderm of the capitulum of *Edwardia*, but there is no ectodermal musculature. As in Carlgren's tribe *Protantheæ*, there are no mesenterial stomata and no acontia. All these and other points show great affinities between *Edwardia* and the *Protantheæ*.

CERFONTAINE (13) discusses the arrangement of the tentacles in *Cerianthus membranaceus*. Fresh tentacles are constantly being formed. The author also says that if pieces are cut off a polype of *Astroides calycularis*, polypes arise which never produce a skeleton, but grow nevertheless and reproduce by gemmation.

NAGEL (37) made a series of experiments, proving the existence of a sense of taste in the tentacles of several species of sea anemones. A piece of the flesh of a sardine was greedily seized by the tentacles and swallowed, a piece of blotting paper of the same shape was not touched; a piece of sardine flesh which had been washed in water for some time was seized, but not very energetically, but a piece of blotting paper which had been soaked in the sardine extract was seized as eagerly as the flesh itself.

WILLEM (47) made some experiments on the digestion of sea anemones by feeding them with carminated albumen and the liver of the mussel. He finds that the absorption takes place by the whole of the endoderm and the endoderm only. No grains of carmine or liver globules were ever found in the cells of the mesenterial filaments.

HADDON (25) describes some young larvæ of *Euphyllia*, 1.5 mm. long. They rested on their aboral surface on the side of the vessel. They had eight complete mesenteries and two incomplete ones, these being the sulco-sulcar laterals. According to Bourne, the adult *Euphyllia* is radially symmetrical. This larva is obviously bilaterally symmetrical.

HICKSON (27) gives some preliminary notes on the minute anatomy of *Alcyonium digitatum*. There is no evidence for the existence of a true mesogloea in all the cords of endoderm cells found in the mesogloea between the coelentera. A nervous system, in the form of a delicate network of nerves and cells, penetrates the mesogloea. The author also gives an account of the mode of retraction of the polyps, and of a series of experiments made at Plymouth, proving the tidal rhythm of expansion and contraction of the polyps in the living state.

VON KOCH (33) describes some colonies of *Bebryce mollis*, which are true stolons, like those of the *Stolonifera*. These stolons, moreover, secrete basally (from the ectoderm) a horny lamella. The author also describes aggregated colonies of *Balanophyllia verrucaria*, which are easily distinguished from those formed in the ordinary way by budding.

VON KOCH (34) states that a piece of the stolon of *Clavochroa* is constant in growth for twenty days, increasing in length 0.5 mm. per diem, and forming a new polype every sixth day.

STUDER (44) calls attention to a case of reproduction by fission occurring in an Alcyonarian (*Schizophytum echinatum*).

#### CTENOPHORA.

SAMASSA (42) writes an elaborate and fully illustrated paper on the histology of the *Ctenophora*. He was unable to find any definite nervous system, but he regards the polar bodies, the polar fields, and the mesenteric bands as forerunners of a nervous system, and capable of performing its physiological functions. He concludes with some remarks in support of Lang's view that the *Turbellaria* are derived from the *Ctenophora*.

CHUN (14) has an interesting paper on some of the more recent results of his work on the life-history of *Ctenophora*. He defines "Dissoecy" as the condition in which a single individual becomes sexually mature in two different forms, between which is interposed a stage in which the development of the sexual products occurs.

The particular case discussed is that of *Bolina hydatina*, which develops forth a sexually mature Cydippe form, followed by a stage in which the gonads disappear before the adult characters make their appearance. Dissoecy is obviously a form of Pædogenesis, but differs from it in the interposition of a non-sexual stage between the larval and adult forms.

The author has also a chapter on the mechanics of the development of the *Ctenophora*.

#### SYMBIOSIS.

ALCOCK (1) describes a remarkable case of commensalism between a Scorpenoid fish, *Minous inermis*, and the Gymnoblastic hydroid, *Stylactis minoi*, n. sp. The *Stylactis* is never found without the *Minous*, and the *Minous* without the *Stylactis*. The association of these two forms occurs in a wide area of the Indian Seas. The *Stylactis* is usually

on the throat and around the gill opening of the fish, and it seems to afford it additional resemblance to the encrusted rocks among which it lives.

### CORAL REEFS.

The most important contributions to our knowledge of Coral Reefs during the year 1892, are those of ORTMANN (38). This author states that the reefs of the East African coast, from the coast opposite Zanzibar as far south as Mikiudani, are all fringing reefs. There are no true atolls nor barrier reefs. The coast all along the line has been undergoing gradual elevation, as is proved by numerous remains of old reefs above the sea level.

He found that many corals, such as *Porites*, *Goniastrea*, *Cæloria*, and *Tubipora*, are able to survive exposure to the sun and air at low tides for hours together.

Some corals, such as *Psammocora*, *Montipora*, and *Lophoseris*, are capable of thriving on a loose gravelly bottom, held together by sea-grass.

In his account of the corals of Dar-es-Salaam, the same author (39) shows that of the 44 species, 12 are widely distributed in the Indo-Pacific region, 23 are Indian species, 2 of which go as far as China, 5 are purely Pacific, and 2 are new.

SLUITER (43) points out that the views as to the origin of coral reefs usually attributed to Chamisso, are really those of Eschscholtz.

GREGORY (21) gives a short account of some of the more recent results obtained by making borings on coral reefs.

The editor of Natural Science (3) gives a short account of Saville Kent's book on the Australian Barrier Reef (1893), illustrated by two excellent photomezzotints of the reef.

### III.—FAUNISTIC.

BRUNCHORST (11) gives a list of all the *Cœlenterata* known to occur in the neighbourhood of Bergen.

KIRKPATRICK (32) gives an account of the *Hydroidea* collected by Professor Haddon in Torres Straits, and a list of all the known species from that district. *Tubularinæ*, 4 species; *Campanularinæ*, 5 species; *Sertularinæ*, 11 species; and *Plumularinæ*, 12 species.

HICKSON (28) gives an account of the *Hydrocorallinæ* collected by Professor Haddon in Torres Straits. 3 species.

ANTIPA (4) describes the *Lucernaridæ* collected in the region of East Spitzbergen. 3 species.

VANHÖFFEN (46) gives an account of the *Akalephæ* collected by the Plankton Expedition. 9 species, and an account of the distribution of the *Cathammata*.

ORTMANN (39) gives a list of the corals found upon the reefs in the neighbourhood of Dar-es-Salaam.



1881. 22 pages figures of *Calceus loricatus* and *Paniculus quadricornis* and a list of all the Pennatulids found on the coast of Norway.  
 1882. 22 pages 10 pp. 30-35. a very useful list of the names of the species of *Hydrozoa* occurring in different parts of the world.

## IV.—NEW GENERA AND SPECIES.

### HYDROZOA.

#### GYMNODASTEA.

KIRKPATRICK (32), describes the following new species:—

*Coryne* r. *Synecoryne cyatharia*, p. 606, growing on *Cellepora granulosa* Harry Pennell, 5 fathoms.

*Chlorocoryne laticornis*, p. 606, growing on *Idia pristis*, Murray I., 15 to 20 fathoms.

*Eudendrium cyathoides*, p. 606, 20 miles N.N.W. of Warrior I., 5 fathoms.

*Syringidia nana*, ALLEN (33), p. 212, commensal with the fish *Micropogonias undulatus* in the Indian Sea.

#### ANTHOMEDUSÆ.

FORTY-SIX. HARTLAUB (26), p. 19, Mediterranean. HARTLAUB (26) points against VASCHOFF'S views in joining *Pandaea* and *Tia*. The genera of the two genera are not alike.

#### CALYPTROBLASTEA.

*Diphyidus venturiformis*, KIRKPATRICK (32), p. 603, growing on *Aglaphenia huxleyi*, 20 miles N.N.W. of Warrior I., 5½ fathoms.

#### HYDROCORALLINÆ.

*Millepora tenella*, ORTMANN (39), p. 668, Dar-es-Salaam.

#### RHABDOPHORA.

*Dicranograptus arkansasensis*, GURLEY (23), p. 416, *Dicellograptus* z. Arkansas. *D. nicholsoni*, var. *parvangularis* (n. var.), *id. loc.*

*Diplograptus trifidus*, *id.* p. 417. Several localities associated with the *Dicellograptus* fauna. *Dictyon* *id.* p. 418, *Dicellograptus* zone, Arkansas.

## SIPHONOPHORA.

*Muggiæa atlantica*, CUNNINGHAM (16), Plymouth. The author remarks that this species may be identical with Hæckel's *Muggiæa pyramidalis*.

## SCYPHOZOA.

VANHÖFFEN (46) disapproves of the division of the *Scyphozoa* into *Octomeria* and *Tetrameria*. He divides the *Cathammata* (of CLAUS) into two divisions :—

Incoronata	{	<i>Charybdeidæ.</i>
	{	<i>Lucernariidæ.</i>
	{	<i>Depastridæ.</i>
	{	<i>Tesseridæ.</i>
Coronata	{	<i>Periphyllidæ.</i>
	{	<i>Ephyropsidæ.</i>

The same author (46) describes the following new species :—

*Nausithoe clausi*, p. 14, Carolines.

*Nauphanta veltoris pisani*, p. 15, Carolines.

*Lucernosa*, n. g., which differs from *Lucernaria* in the more complicated structure of its gonads. It includes four species: *L. bathyphila* = *Lucernaria bathyphila* (Hæckel), and the following three which are new, *L. waltheri*, p. 379, *L. kükenthali*, p. 386, *L. hæckeli*, p. 388, all from E. Spitzbergen, 10–35 faths., ANTIPA (4).

*Cassiopea zamachana*, BIGELOW (7), Jamaica.

## ANTHOZOA.

## ZOANTHARIA.

## MADREPORARIA PERFORATA.

BROOK (10) adds the following new species of the genus *Madrepora* :—

*M. ambigua*, p. 451, Northumberland I. *M. arcuata*, p. 452, Samoa. *M. armata* (= *M. spicifera*, Dana), *M. assimilis* (= *M. appressa*, Quelch), *M. australis*, p. 453, Darnley I. and Wreck Bay, Gt. Barrier Reef. *M. bæodactyla* (= *M. seriata*, Brüggemann), *M. bifuria*, Java. *M. botryodes* (= *M. gonagra* and *M. haimiei*, Brüggemann), p. 454. *M. brevicollis*, Rodriguez, &c. *M. bullata*, Port Denison. *M. calamaria* (= *M. plantaginea* and *M. acroata*, Brüggemann), p. 455. *M. clavigera*, loc. ?. *M. cophodactyla*, loc. ?. *M. coronata*, p. 456, Gt. Barrier Reef. *M. decipiens*, Gt. Barrier Reef. *M. elseyi*, N. Australia and Gt. Barrier Reef. *M. exilis*, p. 457, Arafura Sea, 10 faths., &c. *M. fruticosa*, loc. ?. *M. gemmifera* (= *M. seriata*, Quelch). *M. grandis*, Gt. Barrier Reef. *M. guppyi*,

p. 458, Solomon Is. *M. irregularis* (= *M. alces*, Brügge Rodriguez and Macclesfield Bank, 7 or 8 faths. *M. kenti*, day I. and Gt. Barrier Reef. *M. latistella*, p. 459, Port D. *M. loripes*, Gt. Barrier Reef. *M. nigra* (= *M. ehrenbergii*, B. *M. oligocyathus*, p. 460, Mauritius. *M. orbicularis*, Ceylon *patula*, Port Denison. *M. pectinata*, Thursday I. *M. rayneri*, Fiji. *M. recumbens*, Gt. Barrier Reef. *M. reticulata*, Arafu &c. *M. sarmentosa*, p. 462, Gt. Barrier Reef. *M. spectabilis* *M. squamosa*, p. 463, Gt. Barrier Reef. *M. syringodes*, Gt. Reef, Samoa, &c. *M. tenella*, p. 464, Macclesfield Bank, 3 faths. *M. tizardi* (= *M. nasuta*, B. Smith), *M. violacea*, Fiji, &c.

ORTMANN (39) describes *Madrepora cylindrus* and *M. horizontalis*, Dar-es-Salaam.

REHBERG (41) adds the following species :—

*Dendrophyllia japonica*, p. 28, Japan.

*Cænopsammia ramiculosa*, p. 29, Japan.

*Madrepora incrustans*, p. 35, Tonga Tabu. *M. repens*, p. 36, Madagascar. *M. mexicana*, p. 38, Mexico. *M. dichotoma*, p. 39, Pelew. *M. pinensis*, p. 40, Philippines. *M. elliptica*, p. 41, Luzon. *M.* p. 41, Ceylon. *M. papillosa*, p. 42, Tahiti. *M. pelewensis*, Pelew.

*Turbinaria marmorea*, p. 43, Ponapé. *T. crispa*, p. 44, Tonga.

*Anacropora spinosa*, p. 46, Pelew.

### PORITIDÆ.

*Porites capricornis*, p. 46, Pelew. *P. profundus*, p. 48, Madagascar. *P. reticulum*; ORTMANN (39), Dar-es-Salaam.

### MADEEPOBARIA IMPERFORATA.

#### TURBINOLIDÆ.

REHBERG (41) describes *Heterocyathus pulchellus*, p. 8, West Coast of Australia. *H. oblongatus*, p. 9, South China Sea, 16 faths.

#### OCULINIDÆ.

*Amphihelia adminicularis*, p. 10, Japan.

*Madracis axillaris*, p. 10, Fiji, 80 faths.

#### ASTREIDÆ.

*Pterogyra simplex*, p. 14, New Ireland.

*Mussa crassidentata*, p. 16, Pelew Is.

*Sumphyllia subtilis*, p. 16, Fiji.

*Hyllia stuhlmanni*, p. 17, Zanzibar. *U. maxima*, p. 18, Duke of

*Tridacophyllia elongata* p. 18, Pelew.

*Cæloria elegans*, p. 20, N. E. Coast of Australia. *C. deltoides*, p. 20, E. Coast of Australia. *C. australiensis*, p. 21, N. E. Coast of Australia.

*Hydnophora columellata*, p. 21, Yap. *H. klunzingeri*, p. 22, Samoa.

*Clavarina composita*, p. 22, Pelew.

*Echinopora pellucida*, p. 23, Pelew.

*Astræosmilia*, n. g., allied to *Dasyphyllia*, but differing from it principally in the long, laterally-connected calyces and the absence of "Colerettæ." *A. connata*, p. 664, Dar-es-Salaam; ORTMANN (39).

#### LOPHOSEERIDÆ.

*Folioseris*, n. g., p. 26: this genus stands close to *Pavonia*, from which it differs in the arrangement of the calyces, which do not stand in rows. On the other hand, it shows affinities with the genus *Mycedium*; REHBERG (41).

*F. crispa* (= *Agaricia crispa*, Ehrenberg). *F. papyracea* (= *Pavonia papyracea*, Dana).



## XVII. SPONGIÆ.

BY

R. HANITSCH, Ph.D.

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### I.—LIST OF PUBLICATIONS.\*

1. ANONYMOUS. [Note on Sponge Deposits discovered near Island of Pantelleria.] *Nature*, xlv, p. 474.
2. APPELLÖFF, A. Om Bergensfjordenes faunistike præg. *Bergens Mus. Aarsber.* 1891, pp. 1-14.  
Sponges, pp. 11, 12, & 14.
3. BIDDER, G. Note on the Excretion in Sponges. *P. R. Soc. li*, No. 313, pp. 474-484, 5 woodcuts.
4. ——. On the flask-shaped Endoderm and Spongoblasts in one of the Keratosa [*Cacospongia*, sp.]. *Op. cit.* lii, No. 315, pp. 134-139, 3 woodcuts.
5. BRAUN, M. Nachträge und Berichtigungen zum Zoologischen Theil von "Die landeskundliche Literatur über die Grossherzogthümer Mecklenburg," &c. *Arch. Ver. Mecklenb.* xlv, pp. 87-95.  
*Spongia*, p. 93.
6. BUCK, E. Einiges über den Bodenseeschwamm. *Deutsche Fischerei-Zeitung*, xv, pp. 366 & 367.
7. CHWOROSTANSKY, C. Ueber die Zone des Küstenstriches der Solowezki-Inseln. *Zool. Anz.* xv (1892), pp. 214 & 215.  
2 Sponges, *Suberites glaserapii*, Mer., and *Halisarca Fr.-schulzei*, Mer.
8. CORTI, B. Foraminiferi e Diatomee fossili del pliocene di Castenedolo. *Rend. Ist. Lombardo* (2) xxv, pp. 991-1012, 1 pl.  
1 Sponge, *Spongolithis acicularis*, Ehrenb., mentioned, p. 1011.

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\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

1. JENKINS, E. *Entwickelung des Sponges*; développement post les sponges calcarees et fibreuses marines et d'eau douce. *Exper.* 11, 2, No. 2, pp. 346-404, 4 pls. Abstract in *Bibli. Zoologica*, No. 1, pp. 23 & 24.
2. JENKINS, E. The identity of the true Nature of the family *Trochammina*. *Zool. Ann.* xv (1892), pp. 245 & 246.  
Jenkin names the priority over R. v. Lendenfeld of having proposed the family *Trochammina*.
3. —. Synopsis of the Australian *Calcareous Heterocaula*, with partial classification of the group, and descriptions of new genera and species. *P. R. Soc. Vict.* (n.s., v. pp. 69-116.  
4 new genera: 22 new species: 1 new variety.
4. —. Preliminary account of *Spongia pulchella*, a new species of *Calcareous Spongia*. *Op. n. l.* iv. pp. 1-6.  
1 new genus: 1 new species.
5. —. On a new species of *Leucosolenia* from the neighbourhood of Phillip Head. *Op. n. l.* v, pp. 173-180.  
1 new species.
6. MÜLLER, L. [Description of *Petrostoma scholaei*, n. g., *Calcareum*, representing a new order *Lithonema*.] *Verh. deutsch. Ges.* i (1892) pp. 143-145.
7. MÜLLER, F. *Ziele und Wege biologischer Forschung, beleuchtet durch die Gerüstlehre der Organismen*. Jena (G. Fischer) 1911, 12 & 13 pp. 4 pls.
8. —. Die Prinzipien der Gerüstbildung bei Rhizopoden, Ektodermen und Echinodermen (Fortsetzung). *Jen. Z. Nat.* xxvi (1911) pp. 297-466, 19 pls.
9. ETHERIDGE, R. [See JACK & ETHERIDGE (29).]
10. FANSTAD, A. Beitrag zur Symbiose von Algen und Spongia. *Mém. Ac. Pétersb.* (7) xxxviii, 16 pp.
11. GARSTANG, W. Notes on the Marine Invertebrate Fauna of Plymouth for 1892. *J. Mar. Biol. Ass. (n.s.)* ii, No. 4, pp. 3-11.  
1 Sponge, *Leucosolenia lacunosa*, Bwk.
12. GEINITZ, H. B. Die Versteinerungen des Herzogthums Altenburg. *MT. Osterlande (n.f.)* v, pp. 161-199.  
*Spongia*, p. 191.
13. GRIFFITHS, A. B. The Physiology of the *Invertebrata*. (L. Reeve & Co.): 1892, 8vo, xvi & 477 pp., 81 woodcuts.  
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14. HANITSCH, R. Foraminifer or Sponge? *Nature*, xlvii, 2

22. [HANITSCH, R.] Foraminifer or Sponge? *Nature*, xlvii, No. 1219, p. 439.  
On *Neusina agassizi*, Goës, a supposed Foraminifer.
23. HARTOG, M. M. Some Problems of Reproduction : a Comparative Study of Gametogeny and Protoplasmic Senescence and Rejuvenescence. *Q. J. Micr. Sci.* xxxiii, pt. 1, pp. 1-79.  
Sponges, pp. 48 & 49.
24. HERDMAN, W. A. Fifth Annual Report of the Liverpool Marine Biological Station now on Puffin Island. *Proc. Liverpool Biol. Soc.* vi, pp. 10-39.  
Sponges, pp. 26 & 28.
25. —. Notes on the Collections made during the Cruise of S.Y. "Argo" up the West Coast of Norway, in July, 1891. *T. c.* pp. 70-93, 2 pls.  
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26. HINDE, G. J. On *Palæosaccus dawsoni*, Hinde, a new genus and species of Hexactinellid Sponge from the Quebec group (Ordovician) at Little Métis, Quebec, Canada. *Geol. Mag.* (3) x, No. 344, pp. 56-58, 1 pl.  
1 new genus and species.
27. HINDE, G. J., & HOLMES, W. M. On the Sponge-remains in the Lower Tertiary Strata near Oamaru, Otago, New Zealand. *J. L. S.* xxiv, No. 151, pp. 177-262, 9 pls.  
1 new genus, 15 new species, several undetermined.  
HOLMES, W. M. [See HINDE & HOLMES (27).]
28. HORNELL, J. A Strange Commensalism—Sponge and Annelid. *Nature*, xlvii, No. 1204, p. 78.  
*Microciona plumosa* and *Leucodora cæca*.
29. JACK, R. L., & ETHERIDGE, R., JUN. The Geology and Palæontology of Queensland and New Guinea. Brisbane (Beal) and London (Dulau & Co.): 1892, xxx & 768 pp., 68 pls., 1 map.  
Sponges, pp. 199 & 436-439 ; 1 new species.
30. KAFKA, J. Untersuchungen über die Fauna der Gewässer Böhmens. II. Die Fauna der böhmischen Teiche. *Arch. naturw. Landesforsch. Böhmen*, viii, p. 113.  
*Spongillidæ*.
31. KELLCOTT, D. S. The Mills Collection of Freshwater Sponges. *Bull. Buff. Nat. Club*, v, pp. 99-104.
32. KOJEVNIKOV, G. La faune de la mer Baltique orientale et les problèmes des explorations prochaines de cette faune. *Congrès internat. de Zoologie*, ii, No. 1, p. 140.



33. KORSCHULT, E., & WELTNER, W. Die Lebensverhältnisse *Dreissensia polymorpha*. Naturw. Wochenschrift, vii, pp. 391-399 *Spongillida*, p. 393.
34. LAMEERE, A. Prolégomènes de Zoogénie. Bull. Sci. Fr. Belg. : (1891), pp. 399-411.  
Systematic position of Sponges, &c.
35. LENDENFELD, R. VON. Siliceous Spicules of *Geodia*. J. R. M. Soc. 1892, p. 50. Abstract of paper, Ueber die Kieselnadeln *Geodia*; Zool. Anz. xiv (1891), pp. 407-409. [Vide Zool. Rec. 1892, p. 109.]
36. —. Bemerkung über die *Homodermida*. Zool. Anz. xv (1891), p. 109.
37. —. Ueber Minchin's Angaben betreffs der Histologie der Kalkschwämme. T. c. pp. 277-279.
38. —. Berichtigung. T. c. p. 370.  
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39. —. Note on Mr. Minchin's paper on *Ascetia*. Ann. N. H. (6) p. 337.
40. —. Note on Dr. Hinde's Tertiary Sponge-spicules. Op. cit. p. 268.
41. —. Bemerkungen über die neuerlich von Dendy beschriebenen Kalkschwämme. Biol. Centralbl. xii, pp. 58-60.
42. —. Die Spongien der Adria. II. Mittheilung. Die *Hexacera*. Z. wiss. Zool. liv, hft. 3, pp. 275-315, 1 pl.
43. MAAS, O. Die Metamorphosen von *Esperia lorenzi*, O. S., 1 Beobachtungen an anderen Schwammlarven. MT. z. Stat. Neapel, hft. 3, pp. 408-440, 2 pls.
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45. —. [Demonstration of Larvæ of Siliceous Sponges.] V. Deutsch. Zool. Ges. ii, p. 142.
46. MARSHALL, W. Spongiologische Beiträge. Festschrift zur Wiederkehr des Geburtstages von Rud. Leuckart. Leipzig (C. Winter): 1892, imp. 4to, 36 pp., 8 pp. explanation, 8 pls.  
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48. MINCHIN, E. A. Dr. von Lendenfeld on the Central Cavity in *Euplectella*. Ann. N. H. (6) ix, pp. 408 & 409.
49. —. Some points in the Histology of *Leucosolenia (Ascetta) clathrus*, O. S. Zool. Anz. xv (1892), pp. 180-184, 3 woodcuts.
50. —. Dr. von Lendenfeld als Kritiker. T. c. pp. 415-417.
51. —. Note on a Sieve-like Membrane across the Oscula of a Species of *Leucosolenia*, with some observations on the Histology of the Sponge. Q. J. Micr. Sci. xxxiii, pt. 2, pp. 251-272, 2 pls. Abstract in J. R. Micr. Soc. 1892, ii, pp. 218 & 219.
52. —. The Oscula and Anatomy of *Leucosolenia clathrus*, O. S. Q. J. Micr. Sci. xxxiii, pt. 4, pp. 477-495, 1 pl.
53. —. Structure of Calcareous Sponges. [Abstract of Minchin's recent papers.] Am. Nat. xxvi, p. 863.
54. MUNROE, K. Sponge and Spongers of the Florida Reef. Scribner's Magazine, Nov. 1892, pp. 639-649, 6 woodcuts.  
Popular account of Sponge-fishing.
55. NOBRE, A. Estudos de Zootomia. Fasc. 2. Porto (Typographia Occidental): 1892, pp. 49-84, 3 pls.  
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58. PEARCEY, F. G. Foraminifer or Sponge? Nature, xlvii, No. 1217, p. 390.  
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59. PÖCKA, P. Ueber Spongien aus der oberen Kreide Frankreichs in dem mineralogischen Museum in Dresden. Mit Vorwort von Dr. H. B. Geinitz. MT. min. geol. Mus. Dresden, xi. Cassel (Th. Fischer): 1892, 4to, 26 pp., 4 pls.  
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60. RAUFF, H. Ueber den Bau des Stützskeletes bei den Anomocladinen und Tetracladinen. SB. niederrhein. Ges. xlviii (1891), pp. 33-37.
61. —. Ueber eine eigenthümliche Gruppe fossiler Kalkschwämme (*Polysteganiinae*). T. c. pp. 45-50.  
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62. THOMSON, J. A. *The Study of Animal Life*. London (John Murray) 1892. 8vo. xii & 375 pp., 71 woodcuts.  
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63. —. *Outlines of Zoology*. London (Young J. Pentland): 8vo. xvi & 641 pp., 32 pls.  
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64. TOPSENT, E. *Study of Clonida*. J. R. Micr. Soc. 1892, pt. 3, Abstract of Deuxième contribution à l'étude des Clonides. Z. exper. (2) ix (1891). No. 4, pp. 523–554, 1 pl. [Vide Rec. 1891.]
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70. —. Die Tier- und Pflanzenwelt des Süßwassers. Referat das gleichnamige Werk von O. Zacharias. Naturwissenschaftliche Wochenschrift, 1892, pp. 445 & 446.
71. —. Das Vorkommen von *Cordylophora lacustris*, Allm. bei SB. nat. Fr. 1892, No. 6, pp. 76–80.  
Freshwater Sponges, p. 80.
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73. —. Metallausgüsse des Canalsystemes eines Süßwasserschwammes. SB. nat. Fr. 1893, No. 1, pp. 5 & 6, 1 woodcut
74. —. Ueber die Autorenbezeichnung von *Spongilla erinaceus*. pp. 7–13.  
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— [See also KORSCHIELT & WELTNER (33).]

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78. ZACHARIAS, O. Die biologische Station zu Plön. Zool. Anz. xv (1892), pp. 36-39, 1 woodcut.  
The author recommends the station for the study of Freshwater Sponges, which are found there in enormous quantities.
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80. —. Die Entwicklung der Gemmulæ bei *Ephydatia fluviatilis*, Auct. Bull. Mosc. 1892, pp. 1-16, 2 pls. Abstract in J. R. Micr. Soc. 1892, pt. 3, p. 378, and (in Russian language) in Rev. Sci. Nat. St. Pétersb. ii, No. 9, pp. 342-344.
81. —. Entwicklungsgeschichte von *Ephydatia mülleri*, Lieberk., aus den Gemmulæ. Eine biologisch-embryologische Skizze. Biol. Centralbl. xii, Nos. 23 & 24, pp. 713-716.
82. —. [Distribution of the *Spongillidæ* in European Russia. Journal Zool. Departm. & Zool. Museum, Moscow, ii, pp. 27-29.] [Russian?]

## II.—ANATOMY, EMBRYOLOGY, PHYSIOLOGY, BIOLOGY.

### (A.) ANATOMY, HISTOLOGY, MORPHOLOGY, AND PHYLOGENY.

BIDDER (3) describes some observations which he thinks prove that the "Metschnikoff" cells and glandular ectoderm cells of *Ascetta* have an excretory function. After the Sponge had been left in a solution of indigo-carmin, in sea water, the granules normally present in those cells became replaced by dark-blue granules. From the Metschnikoff cells (which extend throughout the whole thickness of the Sponge) the granules are probably discharged, both into the gastral cavity and on to the ectodermal surface. A completely different set of granules is found in the basal portion of many Sponges (basal spherules of the endoderm)—they are possibly stores of nutritive matter. This basal portion (plinth) may break off, and then it is used as food by wandering cells (generative elements). The life-history of the collar-cells, and of the Metschnikoff cells is now given. The author suggests, as a working hypothesis, that

the granules in the ectoderm and in the Metschnikoff cells of *A* a nitrogenous excretion, common to the protoplasm in all Sponges varying in their degree of solubility. In some Sponges (*Halys* excretion forms a slimy covering, in others a horny cuticle, as in Horny Sponges, it has been retained within their bodies until a spongin skeleton.

BIDDER (4) is able to show that the ectoderm cells of the Sponges are of the same form and character as those of the *L*, viz. of T shape, forming roughly hexagonal areas on the surface, the centre of which the flask-shaped cell-bodies are attached. The *L* lies at the base of the pendant cell-body. The spongioblasts continuous with the ectoderm, and are of the same character. The *L* nothing more than the concentrated cuticle of a large number of cells, poured out around an intrusive foreign object. This is the hexagonal markings of the horny fibre. Bidder finally criticizes a paper on the histology of *Ascetta clathrus*, and thinks that the theory of a contractile ectoderm not well tenable.

DENDY (11), who last year published the *Calcarea Homocela* instalment of his proposed Monograph of the Australian Sponges, unfortunately been prevented, by the reduction of the Government Grant to the Royal Society of Victoria, from continuing his Monograph as intended, and gives now merely a synopsis of the *Calcarea E* (For a proposed new classification of that group, see Systematic part of this Record.)

DENDY (12) gives a preliminary account of *Synute pulchra* genus and species of Calcareous Sponges. The Sponge is remarkable from the fact that it consists of a colony of Sycon individuals completely fused together into a single mass, invested in a common

DÖDERLEIN (14) describes a most remarkable Calcareous Sponge, *Lithothamnium schulzei*, n. g. & sp.), representing a new order (*Lithothamnium* the Sagami Bay, Japan. There are two layers of spicules in the sponge — an outer loose one, composed of triacts and tetracts, and an inner layer which, in the young condition, consists of somewhat tetracts. These latter tetracts soon fuse together, and form a continuous network, similar to that of the *Lithistidae*. The author emphasizes the fact that this Sponge is different to the fossil *Pharetrone* in that the spicules are held together by a foreign substance. It is regretted that no illustrations are given of this curious form.

HINDE & HOLMES (27) describe the Sponge-remains in the Tertiary strata near Oamaru, Otago, New Zealand. The material consisted exclusively of detached spicules. This was the case not only with Monaxonid and Tetractinellid Sponges, but also with Lithistid and more strange, with Hexactinellid Sponges.

VON LENDENFELD (42) gives a detailed description of the *He* of the Adriatic, viz., *Haliscarca dujardini*, *Aplysilla rosea*, *A. Darwinella aurea*. As in former papers, he divides the *Silicea* subclasses: *Triaxonia* (with large sack- or pocket-like, simple or

chambers), and *Tetrazonia* (with small, spherical or oval simple chambers). The *Triaxonia* comprise two groups: the *Hexactinellida* (with siliceous skeleton), and the *Hexaceratina* (with horny or no skeleton). The *Hexaceratina* consist of three families: (1) *Darwinellidae*, with horny fibres and horny spicules; (2) *Aplysillidae*, with horny fibres only; (3) *Halisarcidae*, without skeleton. This last family is possibly not a natural one, its two genera—*Halisarca* and *Bajulus*—are perhaps of different origin.

MAAS (44) discusses the question as to whether the three layers, of which adult Sponges are generally considered to consist, are derived from three or two germinal layers. Recent researches—histological (Topsent, Minchin), and embryological (Schulze)—point towards two germinal layers. The author's observations on the development of *Esperia* confirm such a theory. There are two layers in the larva of *Esperia*. The one is made of slender flagellated cells, and covers the anterior and lateral portions of the larva; the other is much more bulky, forms the central and posterior mass, and, even at this stage, contains spicules. Whilst the former of the two layers gives rise only to the endoderm, the latter forms all other tissues of the Sponge. It consists of two kinds of cells in the larval stage. The one kind has a granular protoplasm, and forms, later on, the amœboid wandering cells; the other kind of cells has a homogeneous protoplasm, their nuclei show an intranuclear network; these cells form the "ectoderm" and the "cellules contractiles" of Topsent; and, last of all, the glandular cells, which secrete the spongin. Thus we have two germinal layers, which may be called "Ectomesoderm" and "Endoderm."

MARSHALL (46) describes a new form of spicules from *Foliolina lendenfeldii*, n. sp., called Gomphostyles, from their nail-like shape. The head of the spicule is flattened out at right angles to its axis. The axis is twisted.

MINCHIN (49) describes the ectoderm of *Leucosolenia clathrus* as consisting, in the expanded state, of flattened, non-ciliated cells. The cells, when contracting, assume a mushroom form, the nucleus remaining in proximity to the limiting membrane. The pores originate in certain ectoderm cells, which grow inwards until they join the endoderm cells, thus forming a complete connection between ectoderm and endoderm. These cells then become perforated. The fully-formed pore, therefore, lies in one single cell. Mesoderm and endoderm are also discussed.

MINCHIN (51) describes a sieve-like membrane across the oscula of *Leucosolenia* (probably *L. coriacea*), which consists of two layers of cells separated by a small amount of jelly. The outer layer of cells is continuous with the ectoderm, the inner with the endoderm. The sieve-like membrane is probably formed by a breaking through of the gastral cavity to the exterior. The author was not able to see distinct ectoderm cells, and thinks that in the fully-formed Sponge they may degenerate into a cuticle-like structure. In the mesoderm he noticed irregular granular

the work is carefully checked with Toppent's "cellules" the "cellules" of Toppent - which is correct.

Chapter 50 is devoted to the structure and function of the *Leptasterias*, which was formerly supposed to be a *Leptasterias*. The work is done in a series of 10 chapters, the first of which is devoted to the structure of the *Leptasterias* and the second to the function of the *Leptasterias*. The work is done in a series of 10 chapters, the first of which is devoted to the structure of the *Leptasterias* and the second to the function of the *Leptasterias*. The work is done in a series of 10 chapters, the first of which is devoted to the structure of the *Leptasterias* and the second to the function of the *Leptasterias*.

Chapter 51 is devoted to the *Leptasterias*, a series of 10 chapters. The work is done in a series of 10 chapters, the first of which is devoted to the structure of the *Leptasterias* and the second to the function of the *Leptasterias*. The work is done in a series of 10 chapters, the first of which is devoted to the structure of the *Leptasterias* and the second to the function of the *Leptasterias*.

Chapter 52 is devoted to the structure of the *Leptasterias*, a series of 10 chapters. The work is done in a series of 10 chapters, the first of which is devoted to the structure of the *Leptasterias* and the second to the function of the *Leptasterias*. The work is done in a series of 10 chapters, the first of which is devoted to the structure of the *Leptasterias* and the second to the function of the *Leptasterias*.

Chapter 53 is devoted to the structure of the *Leptasterias*, a series of 10 chapters. The work is done in a series of 10 chapters, the first of which is devoted to the structure of the *Leptasterias* and the second to the function of the *Leptasterias*. The work is done in a series of 10 chapters, the first of which is devoted to the structure of the *Leptasterias* and the second to the function of the *Leptasterias*. The work is done in a series of 10 chapters, the first of which is devoted to the structure of the *Leptasterias* and the second to the function of the *Leptasterias*.

Chapter 54 is devoted to the structure of the *Leptasterias*, a series of 10 chapters. The work is done in a series of 10 chapters, the first of which is devoted to the structure of the *Leptasterias* and the second to the function of the *Leptasterias*. The work is done in a series of 10 chapters, the first of which is devoted to the structure of the *Leptasterias* and the second to the function of the *Leptasterias*.

On p. 2 Toppent gives a summary of the histology of Sponges. The work is done in a series of 10 chapters, the first of which is devoted to the structure of the *Leptasterias* and the second to the function of the *Leptasterias*. The work is done in a series of 10 chapters, the first of which is devoted to the structure of the *Leptasterias* and the second to the function of the *Leptasterias*. The work is done in a series of 10 chapters, the first of which is devoted to the structure of the *Leptasterias* and the second to the function of the *Leptasterias*.

materials (thesocytes). Finally, as they serve also as connective elements, they correspond, perhaps, in part to Sollas's inocytes. The pigment of Sponges may be in the granular mesoderm cells, or in the flagellated cells. Sollas's chromatocytes, therefore, do not correspond to a special kind of cells. The aesthocytes have probably the function suggested by Sollas.

VOSMAER (68) has a paper on the canal system of *Homocela*, and the morphological value of the terms osculum and pore. According to him, the main excurrent tubes of *Leucosolenia stipitata*, *L. tripodifera*, of a Sycon, and of *Hexactinellida*, are homologous, and are the simplest modifications of the original Olynthus-sack without diverticula. The central cavity of these Sponges he calls cloaca, and its aperture osculum. Procts are the openings of canals or lacunæ into the cloaca. Proctions are the numerous small openings in Sponges like *Cydonium gigas*, where the excurrent canals are covered by a sieve-like membrane. Stomions are the apertures in the dermal membrane of *Cydonium*. A group of stomions corresponds to one stoma.

#### B. EMBRYOLOGY AND ASEXUAL DEVELOPMENT.

DELAGE (9), who last year gave a short preliminary account of the development of *Spongilla fluviatilis* now gives a detailed description of that species, and also of *Esperella sordida*, and *Aplysilla sulfurea*. Last year's paper was received with grave doubts by Minchin (Zoological Record 1891) and Maas (see this Record, p. 12), and now Spongologists will probably not be more ready than before to accept an account which, as Delage himself says, is "sans analogue dans les autres classes du règne animal." The larvæ of the above Sponges are almost entirely opaque, and therefore Delage's accounts of the extraordinary movements of the amœboid cells, &c., were based upon sections only. But, although his plates seem faithful, still their interpretation needs confirmation by other workers. In the meantime, Maas's account of the development of *Esperella* recommends itself far more by its simplicity.

DELAGE distinguishes four kinds of elements in the larva of *Spongilla fluviatilis*: (1) ciliated, (2) epidermal, (3) amœboid, (4) intermediate cells. The ciliated cells cover the larva anteriorly and laterally. The epidermal cells are large, and form a discontinuous layer beneath the ciliated cells. [N.B. The author calls these cells "epidermal" throughout the text, but "ectodermal" in the explanation of plates.] The amœboid cells are very large, and constitute the chief mass of the body. Some of them are specialized to form the spicules. Finally, the intermediate cells stand between the epidermal and amœboid cells. The ciliated cells soon lose their cilia, become irregular in shape, separate from each other, and sink beneath the epidermal cells. The epidermal cells now come to lie along the surface and soon form a continuous epidermis. Then the amœboid cells become active, throw out their pseudopodia and capture the former ciliated cells, each being able to incorporate several of them



After that, the amoeboid cells retract their pseudopodia and assume a nearly spherical shape, having a large nucleus in their centre, and about twenty small nuclei, derived from the captured cells. These Delage's "groupes polynucléés." Götze and Maas regarded these nuclei as yolk-granules. After a pause the "groupes polynucléés" become active once more, throw out pseudopodia, move somewhat apart from each other, still being connected together by their pseudopodia, thus form an irregular mesh-work. Finally, they approach each other and arrange themselves in circles, leaving a small cavity in their centre. Now the ciliated cells separate from the "groupes polynucléés," and arrange themselves so as to form the lining to those cavities. In this way the flagellated chambers are formed. After that, the formation of pores, oscula, &c., is described. The development of *Esperella* and *Aplysilla sulfurea* agrees in its chief features with that of *Spongia*.

MAAS (43) describes the metamorphosis of *Esperia lorenzi*, O. S. He begins his account at the stage when the larva is ready to leave the parent sponge. It is then seen to be covered anteriorly and laterally by an exceedingly narrow columnar ciliated epithelium. Its posterior pole is also ciliated, and there can be made out, only on the closest examination, an epithelium continuous with the former. The nuclei of the ciliated cells are larger than the average diameter of the cells. Accordingly they bulge out, and, in order to find sufficient space, arrange themselves on different levels, thus causing an appearance of several layers of cells. The internal mass of the larva [N.B. Maas avoids speaking of germ layers.] consists of two kinds of cells. The one kind is usually round, with a coarse granular protoplasm, and a clear spherical nucleus. The other is of a spindle-shaped or amoeboid form, has a homogeneous protoplasm, and an oblong nucleus with delicate intranuclear network. The arrangement of the spicules is very instructive: it apparently serves a double purpose, (1) to utilise all space as much as possible, (2) to balance the larva equally when swimming. The megascleres lie in a dense bundle in the axis of the larva. Around the posterior end of that bundle, the rodlets are equally distributed, and, around its anterior end, the toxas. The larval period is only of short duration (from six to twenty-four hours), after which the larva settles down with its anterior pole, and becomes somewhat flattened. Also here, as in the larva, we find two kinds of tissue: small cells with small nuclei, apparently derived from the ciliated cells, but lying ventrally and internally; and larger cells, derived from the mass of the larva, lying now dorsally and externally. The young *Spongia* opaque at first, shows after the first day, here and there, lighter spots, which, in sections, are seen to be subdermal cavities, ciliated chambers, and exhalant canals, in process of development. In regard to the development of the subdermal cavities, Maas agrees with Delage, but partially with Wilson, but not so in regard to the ciliated chambers. The cells with granular contents [groupes polynucléés, Delage] have nothing to do with the formation of the chambers. Independently of those the small cells, formerly the ciliated cells of the larva, group and ar-

themselves so as to form the chambers. Some of them also form the exhalant canals. The two layers of tissue already mentioned, become the ectosome and choanosome of the adult Sponge. The last few pages of the paper are devoted to the further development of the Sponge, including skeleton, tissues, and oscula.

WELTNER (72) has some notes on the structure and development of the gemmules of *Spongillidae*. The "Anlage" of the gemmule, and all later stages up to the time when the inner cuticle begins to be formed, consist of naked, amoeboid, uninuclear cells. In the fully-developed gemmule, the cells of the inner mass are surrounded by a thin membrane, and show no longer an amoeboid movement. Generally, these cells are of two sizes, small uninuclear and large binuclear. Before the contents of the gemmule prepare themselves to leave the capsule, its cells become again amoeboid, and then they possess one, two, three, or four nuclei. Weltner says that Zykoff was not able to see any nuclei in the cells of the gemmules, because he stained whole pieces of Sponge instead of the sectionized gemmules, and the staining fluid is never able to penetrate the capsule. Nor did he examine the gemmules in the living condition. Little is known as to how the "Anlage" of the gemmule is formed. There are four possibilities: (1) Either it is formed from a single cell, which has the morphological value of an ovum: in this case the gemmule would be a morula; (2) or it is derived from several precisely similar mesodermal cells; (3) or from several heterogeneous cells of the mesoderm; (4) or, finally, the gemmule is formed from the cells of (two or three) germinal layers. In this case the gemmule would be a bud.

ZYKOFF (80), after a review of the literature on the subject, gives an account of his own researches on the formation of the gemmules in *Ephydatia fluviatilis*. Between the ordinary amoeboid cells of the parenchym he noticed cells containing boat-shaped, shining granules. The granules are possibly a modification of albumen, and serve as reserve-stores, and the cells, containing the same, may be called yolk-cells. The first appearance of these cells is to be regarded as the first moment in the development of the gemmule. They, together with similar cells, which, however, have no yolk-granules, begin to show a creeping movement, and at the same time they increase in number. This increase is possibly not caused by division, but by other cells being attracted to the same centre. Contrary to Götze's statements, neither the canals nor the chambers take any part in the formation of the gemmules. Soon a division of the gemmule into two layers may be noticed: (1) a central mass, consisting of yolk-cells, and a few amoeboid cells from the mesenchym; (2) a peripheral layer, consisting of several concentric rows of yolkless cells of the mesenchym, which pass over into the mesenchym of the Sponge. These peripheral cells gradually assume a club-shaped form, the thicker end of the cell lying outwards—and arrange themselves in a single layer. One part of the gemmule remains free from these cells: the hilus. The club-shaped cells are disc-like, flattened out on their inner ends, and there they begin to secrete a chitinous cuticle. The amphidiscs are formed outside

the thin-shaped cells and only afterwards, possibly by absorption or pushed between the same and assume a radial arrangement. Finally, the thin-shaped cells leave their position, move on the outside of the ampulla, and form there the second stationary outside. The gamete is a fully formed. The thin-shaped cells are gradually absorbed. Zykoff assumes to see the entire mass of the gamete as consisting of polyzoic *Tendinaria*, or to see nuclei in them (Korschelt & Heider). On contrary, it appeared like a compact, shining, granular substance, with outlines of cells or nuclei. The nuclei are hidden by the yolk. [WATER, who differs greatly regarding this latter point.]

ZYKOFF (1) studied the development of *Ephyra mulleri*, from gametes which had been lying dry for about two years. Rather novel the mechanical explanation which he gives of the formation of one. The young *Ephyra* swims upon the surface of the water, its side being directed upwards, its convex side downwards. Any water taken up by it collects near the centre of the convex surface, pushes down the ectoderm, and finally breaks through it. The chambers developed from certain cells of the parenchyma cells, which divide and form a compact mass of small cells. A cavity appears in this mass, the cells arrange themselves in a layer, and as the chamber thus formed advances in the neighbourhood of canals, and goes on increasing in size some time, it is probable that the connection between chamber and canal is formed by a breaking through.

### C. PHYSIOLOGY AND BIOLOGY.

For the physiology of Sponges, see GRIFFITHS (20) pp. 30-32 & 79 154, 200, 245, & 375.

HORVELL (25) describes a case of commensalism of *Microciona* plan and an Annelid (*Leucodora arcu*).

BIDDER (3, on excretion in Sponges, see Anatomical, p. 7.

## III.—DISTRIBUTION.

### (A.) FAUNISTIC.

Atlantic, especially Bay of Biscay, Newfoundland, and the Azores (67).

Portugal : NOBRE (55).

Great Britain: Plymouth; GARSTANG (18) : Puffin I. (North Wales) HERDMAN (24).

Norway : West Coast; HERDMAN (25) : Fjord of Bergen; APPEL (2).

Russia : Solowezki Is. (White Sea); CHWOROSTANSKY (17) : Spitsbergen ; ZYKOFF (82).

Germany : Lakes near Plön, in Holstein, *Spongillidæ* ; ZACHARIAS (78): *Spongillidæ* in the neighbourhood of Berlin ; WELTNER (71).

Galizia : Lubien, *Carterius stepanovii*, Petr., and *Heteromeyenya repens* Potts. The latter species, of which, however, the gemmulse only were found, was previously not taken outside North America. WIERZEJSKI (76).

Adriatic : *Hexaceratina* ; LENDENFELD (42).

Palestine : Lake Tiberias, *Potamolepis barroisi*, n. sp. ; TOPSENT (66).

Japan : Sagami Bay, 100 faths., *Petrostoma schulzei*, n. g. & sp., representing a new order (*Lithones*) of *Calcarea* ; DÖDERLEIN (14).

Australia : *Calcarea Heterocæla* ; DENDY (11).

### (B.) GEOLOGICAL.

Cambrian : St. John, New Brunswick ; MATTHEW (47).

Ordovician : *Palæosaccus dawsoni*, n. g. & sp. (*Hexactinellid*), from Little Métis, Quebec, Canada ; HINDE (26).

Trias : Saxe-Altenburg ; GEINITZ : St. Cassian, Strata of Southern Tyrol ; OGILVIE (57).

Cretaceous (Upper) : from Meaulne in the département Maine-et-Loire, France. *Lithistidæ* only, no *Hexactinellida*. The absence of the latter can be accounted for by the fact that, amongst recent Siliceous Sponges also, the *Lithistidæ* live in a different depth (up to 350 faths.) from the *Hexactinellida* (up to 600 faths.). ПОЧТА (59).

Tertiary : Lower Tertiary Strata, near Oamaru, Otago, New Zealand. *Monaxonida*, 70 species ; *Tetractinellida*, 22 species ; *Lithistida*, 7 species ; *Hexactinellida*, 11 species. Many of these Sponges have their nearest existing allies living in the Indian Ocean and in the Australian Seas ; but amongst others the genus *Guitarra*, Carter, has hitherto only been found in the Gulf of Mexico and the North Atlantic. Remarkable is the preponderance of *Monaxonida*, as generally the proportions have been reversed. In the Oamaru deposit, the delicate spicules of *Monaxonida* have been preserved equally as well as the larger spicules of the other groups. "The absence of these Sponge-spicules in the older rocks, is rather due to their having perished in the fossilization, than that they did not co-exist with those other groups whose remains have been in part preserved." HINDE & HOLMES (27).

## IV.—SYSTEMATIC AND CLASSIFICATION.

### 1. CALCAREA.

VON LENDENFELD (41) discusses the *Calcarea Homocæla* described by DENDY (Monograph of the Victorian Sponges, Part 1), and substitutes his own nomenclature, viz. :—*Grantia labyrinthica* remains in *Grantia*, Lendenfeld ; while *Leucosolenia asconoides*, *canata*, *dubia*, *stolonifer*, and *ventricosa* are referred to *Ascandra* ; *lucasi*, *pelliculata*, *pulcherrima*, *stipitata*, and *tripodifera* to *Ascetta* ; *wilsoni* to *Leucopsis* ; *depressa* and *protogenes* doubtfully to *Leucopsis* or *Ascetta*.

DENDY (11) gives the following classification of the *Heterocela* :—

Order HETEROCELA.

Family 1. *Leucascidæ*.

Genus. *Leucascus*, n. g.

Family 2. *Sycettidæ*.

Genera. *Sycetta* (Hæckel, emend.) ; *Sycon* (Risso, emend.)  
*Sycantha*, v. Lend.

Family 3. *Grantidæ*.

Genera. *Grantia* (Fleming, emend.) ; *Grantiopsis*, n. subg.  
*Ute* (Schmidt, emend.) ; subg. *Synute*, Dendy  
*Utella*, n. g. ; *Anamizilla* (Poléjaeff, emend.)  
*Sycyssa*, Hæckel ; *Leucandra* (Hæckel, emend.)  
*Lelapia* (Gray, emend.) ; *Leucyssa*, Hæckel.

Family 4. *Heteropidæ*.

Genera. *Grantessa* (v. Lend., emend.) ; *Heteropia* (Cart  
emend.) ; *Vosmaeropsis*, n. g.

Family 5. *Amphoriscidæ*.

Genera. *Heteropegma* (Poléjaeff, emend.) ; *Amphoria*  
(Hæckel, emend.) ; *Syculmis* (Hæckel, emend.)  
*Leucilla* (Hæckel, emend.).

*Grantia vosmaeri*, Port Jackson, DENDY, P. R. Soc. Vict. (n.s.), v, p. 88, n.

*Grantiopsis*, n. g., p. 73, for *G. cylindrica*, n. sp., Port Phillip, p. 1

DENDY, P. R. Soc. Vict. (n.s.), v.

*Grantessa hispida*, Port Phillip, DENDY, P. R. Soc. Vict. (n.s.), v, p. 1  
n. sp.

*Leucandra carteri*, p. 103, *gladiator*, p. 101, *phillipensis*, p. 100, *uteo*  
p. 178, Port Phillip, DENDY, P. R. Soc. Vict. (n.s.), v, n. spp.

*Leucascus*, n. g., p. 72, for *L. simplex*, p. 77, *clavatus*, p. 78, n. spp.,  
Phillip, DENDY, P. R. Soc. Vict. (n.s.), v.

*Lithones*, new order ; DÖDERLEIN, pp. 143–145. For the reception of  
single form, *Petrostoma schulzei*.

*Petrostoma*, n. g. for *P. schulzei*, n. sp., 100 faths., Sagami Bay, Ja  
DÖDERLEIN, Verb. Deutsch. Zool. Ges. ii, pp. 143–145.

*Sycon carteri*, St. Vincent's Gulf, p. 79, *minutum*, Port Jackson, p.  
*ensiferum*, p. 81, *boomerang*, p. 82, Port Phillip, *giganteum*, St. Vinc  
Gulf, p. 84, DENDY, P. R. Soc. Vict. (n.s.) v, n. spp.

*S. gelatinosum*, var. *whiteleggii*, p. 84, Port Jackson, DENDY, P. R.  
Vict. (n.s.) v, n. var.

*Synute*, n. g. for *S. pulchella*, n. sp., p. 2, Port Phillip ; DENDY, P. R.  
Vict. (n.s.) iv.

*Ute spiculosa*, p. 92, *spenceri*, p. 94, Port Jackson, DENDY, P. R. Soc.  
(n.s.) iv, n. spp.

*Utella*, n. g., DENDY, P. R. Soc. Vict. (n.s.) iv, p. 74. Type, *Syca*  
*hystrix*, Hæckel.

*Vosmaeropsis*, n. g., p. 76, for *V. depressa*, p. 110, *wilsoni*, p. 111, n.  
Port Phillip ; DENDY, P. R. Soc. Vict. (n.s.) iv.

## 2. HEXACTINELLIDA.

- Chonelasma schulzei*, TOPSENT, (67) p. 33, pl. iii, fig. 3, & pl. vii, fig. 3, Atlantic, lat.  $33^{\circ} 26' 30''$  N., long.  $33^{\circ} 23'$  W., depth 1557 metres, n. sp.
- Hertwigiidae*, n. fam., TOPSENT, (67) p. 25, established for the reception of *Hertwigia falcifera*, O. S., and *Trachycaulus gurlittii*, F. E. Schulze. *Rhabdodictyum delicatum*, O. S., comes close to it.
- Hexactinella grimaldii*, TOPSENT, (67) p. 34, pl. ii, figg. 1 & 2, & pl. vii, fig. 1, Atlantic, lat.  $38^{\circ} 33' 21''$  N., long.  $30^{\circ} 28' 54''$  W. (between Pico and San Jorge), depth 1300 metres, n. sp.
- †*Palæosaccus*, n. g., p. 56, for *P. dawsoni*, n. sp., Shales of the Quebec Group, p. 57, pl. iv; HINDE.
- Periphragella lusitanica*, TOPSENT, (67) p. 31, pl. vi, fig. 4, & pl. vii, fig. 2, Atlantic, lat.  $39^{\circ} 22' 48''$  N., long.  $33^{\circ} 45' 30''$  W., depth 1384 metres, n. sp.
- †*Purisiphonia clarkei*, Bowerb., shown to be a Lyssakine Hexactinellid; JACK & ETHERIDGE, (29) pp. 436-439, pl. xix.

## 3. TETRACTINELLIDA (with CHONDROSIDÆ, PLAKINIDÆ, HALISARCA, and OSCARELLA).

- Astrella tuberosa*, TOPSENT, (67) p. 44, pl. ii, fig. 4, & pl. viii, fig. 4, Atlantic, lat.  $39^{\circ} 1' 40''$  N., long.  $30^{\circ} 15' 40''$  W., depth 454 metres, n. sp.
- †*Astrocladia fratectosa*, n. sp., POCTA, MT. min. geol. Mus. Dresden, xi, p. 19, pl. ii, figg. 4 & 5, Upper Cretaceous, Meaulne, France.
- Calthropella simplex*, Sollas, var. *durissima*, n. var.; TOPSENT, (67) p. 43, pl. v, fig. 14, and pl. viii, fig. 9, Atlantic, lat.  $39^{\circ} 1' 40''$  N., long.  $30^{\circ} 15' 40''$  W., depth 454 metres.
- Charucella sollasi*, n. sp., TOPSENT, (67) p. 40, pl. ii, fig. 3, & pl. viii, fig. 6, Atlantic, lat.  $43^{\circ} 57'$  N., long.  $9^{\circ} 27'$  W., depth 300 metres; lat.  $38^{\circ} 22'$  N., long.  $30^{\circ} 34' 39''$  W., depth 736 metres; and lat.  $39^{\circ} 1' 40''$  N., long.  $30^{\circ} 15' 40''$  W., depth 454 metres.
- †*Chenendopora batillacea*, p. 7, pl. ii, figg. 1-3, *conferta*, p. 8, pl. iv, figg. 17-20, *radicata*, p. 10, pl. i, figg. 13-16, & pl. ii, fig. 16, *C. p. scutula*, p. 9, pl. iii, figg. 12-14, Upper Cretaceous, Meaulne, France, POCTA, MT. min. geol. Mus. Dresden, xi, n. spp.
- Discodermia ramifera*, n. sp., TOPSENT, (67) p. 50, pl. vi, fig. 10, & pl. viii, fig. 1, Atlantic, lat.  $38^{\circ} 23' 30''$  N., long.  $30^{\circ} 20' 20''$  N., depth 318 metres.
- †*Ditriacnella*, n. g. for *D. oamaruensis*, n. sp., Lower Tertiary, New Zealand, HINDE & HOLMES, J. L. S. xxiv, p. 232, pl. xii, figg. 34 & 35.
- Erylus nummulifer*, n. sp., TOPSENT, (67) p. 47, pl. iii, fig. 14, & pl. viii, fig. 5, Atlantic, lat.  $38^{\circ} 22'$  N.,  $30^{\circ} 34' 39''$  W., depth 736 metres, and lat.  $38^{\circ} 23' 30''$  N., long.  $30^{\circ} 20' 20''$  W., depth 318 metres.

- Hulisarca dujardini*, redescribed, pp. 292-296, pl. xiii, figg. 25-27, .  
*dujardini*, var. *incrustans*, n. var., *H. dujardini*, var. *massa*, n. va  
 p. 293, Trieste; LENDENFELD, Z. wiss. Zool. liv.
- + ? *Isoraphinia gibbosa*, n. sp., PÖCTA, MT. min. geol. Mus. Dresden, :  
 p. 11, pl. iii, fig. 1 : pl. iv, figg. 4 & 5, Upper Cretaceous, Meaulne  
 France.
- + *Jerea clavata*, pl. iv, figg. 10-13, *J. ? caulis*, pl. iii, figg. 8 & 9, p. 1  
 Upper Cretaceous, Meaulne, France; PÖCTA, t. c. : n. spp.
- + *Jereica permira*, n. sp., PÖCTA, t. c. p. 10, pl. ii, figg. 9-13, Upp  
 Cretaceous, Meaulne, France.
- Pachastrella debilis*, n. sp., TOPSENT, (67) p. 42, pl. iii, fig. 8, and pl. vi  
 fig. 8, Atlantic, lat. 38° 22' N., long. 30° 34' 39" W., depth 7:  
 metres, and lat. 38° 23' 30" N., long. 30° 20' 20" W., depth 3:  
 metres.
- + *Plakina australis*, n. sp., HINDE & HOLMES, J. L. S. xxiv, p. 230, pl. x  
 fig. 20, Lower Tertiary, Oamaru, Otago, New Zealand.
- + *Polyjerea indistincta*, n. sp., PÖCTA, MT. min. geol. Mus. Dresden, :  
 p. 18, pl. iv, figg. 2 & 3, Upper Cretaceous, Meaulne, France.
- + *Siphonia piriformis*, var. *acuta*, n. var.; PÖCTA, t. c. p. 13, pl. i  
 figg. 7-9, Upper Cretaceous, Meaulne, France.
- + *Spongodiscus tuber*, n. sp., PÖCTA, t. c. p. 21, pl. i, figg. 2-4, Upp  
 Cretaceous, Meaulne, France.
- Tetilla truncata*, n. sp., TOPSENT, (67) p. 36, pl. viii, fig. 7, Atlantic, la  
 43° 40' N., long. 8° 55' W., Coast of Asturia, 134 metres.
- + *Triptolemus australis*, n. sp., HINDE & HOLMES, J. L. S. xxiv, p. 23  
 pl. xiii, fig. 34, Lower Tertiary, near Oamaru, Otago, New Zealand
- + *Vetulina oamaruensis*, n. sp., HINDE & HOLMES, t. c. p. 240, pl. xii  
 figg. 31-33, Lower Tertiary, near Oamaru, Otago, New Zealand.

#### 4. MONAXONIDA (+ *Tethyada*).

TOPSENT, (67) pp. 63-65, proposes the following classification of th  
*Monaxonida* (chiefly after Ridley and Dendy), in which, however, th  
*Spongillidæ* have been left out altogether.

### Order MONAXONIDA, Ridley & Dendy.

#### 1. Suborder HALICHONDRINA, Vosmaer.

##### Family 1. *Homorrhaphidæ*, Ridley & Dendy.

##### Subfamily 1. *Chalininæ*, Ridley & Dendy.

##### Subfamily 2. *Renierinæ*, Ridley & Dendy.

##### Family 2. *Heterorrhaphidæ*, Ridley & Dendy.

##### Subfamily 1. *Phlæodictyina*, Carter.

##### Subfamily 2. *Trachyina*, n. s. f.

##### Genus *Trachya*, Carter.

Subfamily 3. *Gelliinae*, Ridley & Dendy.

Subfamily 4. *Tedaniinae*, Ridley & Dendy.

Subfamily 5. *Desmacellinae*, Ridley & Dendy.

Genera *Desmucella*, Schmidt, *Biemma*, Gray.

Subfamily 6. *Hamacanthinae*, Gray.

Genus *Hamacantha*, Gray.

Family 3. *Desmacidonidae*, Vosmaer.

Subfamily 1. *Esperellinae*, Ridley & Dendy.

Genera: *Esperella*, Vosmaer; *Esperiopsis*, Carter; *Cladorhiza*, M. Sars; *Axoniderma*, Ridley & Dendy; *Chondrocladia*, W. Thomson; *Desmacidon*, Bowerbank; *Joyeuxia*, n. g.; *Phelloderma*, Ridley & Dendy; *Sideroderma*, Ridley & Dendy; *Histoderma*, Carter; *Dendoryx*, Gray; *Forcepia*, Carter; *Melonanchora*, Carter; *Yvesia*, n. g., *Iotrochata*, Ridley; *Amphilectus*, Vosmaer, &c.

Subfamily 2. *Ectyoninae*, Ridley & Dendy.

Genera: *Myzilla*, Schmidt; *Pytheas*, n. g.; *Clathria*, Schmidt; *Rhaphidoplus*, Ehlers; *Plumohalichondria*, Carter; *Stylostichon*, n. g.; *Microciona*, Bowerbank; *Hymenaphia*, Bowerbank; *Rhabderemia*, n. g.; *Plocamia*, Schmidt; *Suberotelites*, Schmidt; *Spanioplus*, n. g.; *Acarnus*, Gray; *Echinoclathria*, Carter; *Agelas*, Duchassaing & Michelotti; *Echinodictyum*, Ridley.

Family 4. *Azinellidae*, Ridley & Dendy.

## 2. Suborder SPINTHAROPHORA, Sollas (emend).

### 1. Section *Aciculida*, n. s.

Family 1. *Epallacidae*, new family.

Genera: *Epallax*, Sollas; *Scolopes*, Sollas; *Dorypleres*, Sollas.

Family 2. *Stylocordylidae*, new family.

Genus *Stylocordyla*, W. Thomson.

Family 3. *Tethyidae*, Gray.

### 2. Section *Clavulida*, n. s.

Family 1. *Spirastrellidae*, Ridley & Dendy.

Genera: *Spirastrella*, Schmidt; *Latrunculia*, du Bocage; *Hymedesmia*, Bowerbank.

Family 2. *Suberitidae*, Vosmaer.

Subfamily 1. *Suberitinae*, n. s.

Genera: *Suberites*, Nardo; *Weberella*, Vosmaer; *Poterion* Schlegel; *Osculina*, Schmidt, &c.

Subfamily 2. *Polymastinae*, n. s.

Genera: *Polymastia*, Bowerbank; *Ridleya*, Dendy; *Quasilinea*, Norman; *Tentorium*, Vosmaer; *Trichostemma*, M. Sars; *Halicnemis*, Bowerbank; *Tethyspira*, Topsent.

Family 3. *Clionidae*, Gray.

Genera: *Cliona*, Grant; *Thoosa*, Hancock; *Alectona*, Carter.



- Apatospongia*, n. g. (*Suberitidæ* ?), for *A. fullax*, n. sp., Australian Waters, MARSHALL, Leuckart Festschr., p. 16, pl. viii, figg. 1-5.
- Artemisia transiens*, n. sp., TOPSENT, (67) p. 94, pl. iv, fig. 8, pl. ix, figg. 7 & 8, Atlantic, lat. 43° 44' 50" N., long. 8° 12' W., depth 135 metres.
- Azinella flustra*, n. sp., TOPSENT, (67) p. 122, pl. ii, fig. 5, & pl. xi, fig. 18, Atlantic, lat. 43° 40' N., long. 8° 55' W., depth 134 metres, and lat. 38° 23' 30" N., long. 30° 20' 20" W., depth 318 metres.
- Biemma grimaldii*, p. 81, pl. iv, figg. 1-4, & pl. ix, fig. 14, Atlantic, lat. 38° 23' 45" N., long. 30° 51' 30" W., depth 927 metres; *B. dautzenbergi*, p. 83, pl. iii, fig. 5, & pl. ix, fig. 16, Atlantic, lat. 39° 22' 48" N., long. 33° 45' 30" W., depth 1384 metres, TOPSENT (67) : n. spp.
- Cladocroce*, n. g. (Lamelliform *Renierinæ*), for *C. fibrosa*, n. sp., p. 72, pl. iii, figg. 1 & 2, Atlantic, lat. 38° 33' 21" N., long. 30° 28' 54" W. (between Pico and San Jorge, Azores), depth 1300 metres; TOPSENT (67).
- †*Cladorhiza haasti*, n. sp., HINDE & HOLMES, J. L. S. xxiv, p. 210, pl. x, fig. 35, Lower Tertiary, Oamaru, Otago, New Zealand.
- Dendoryx*, Gray. TOPSENT, (67) p. 97, proposes the following definition : "*Esperellinae* generally without a definite shape; megascleres of the ectosome usually diactine (tylote, strongylote, or tornote), rarely monactine, normally smooth; megascleres of the skeleton invariably spined styli." The genus *Dendoryx* thus defined includes the genera *Dendoryx*, Gray, *Alelion*, *Iophon*, *Hastatus*, several species of *Myzilla*, &c. As types of the genus may be regarded: *D. incrustans*, Gray. *D. luciensis*, *certa*, and *pectinata*, Topsent.
- D. certa*, p. 99, pl. x, figg. 7 & 8, Atlantic, lat. 43° 40' N., long. 8° 55' W., depth 134 metres; *pectinata*, p. 100, pl. x, fig. 6, Atlantic, lat. 38° 48' 30" N., long. 30° 19' W., depth 861 metres; TOPSENT (67) : n. spp.
- Desmacella aberrans*, n. sp., TOPSENT, (67) p. 85, pl. ii, fig. 7, & pl. ix, fig. 10, Atlantic, lat. 43° 44' 50" N., long. 8° 12' W., depth 135 metres, and lat. 43° 40' N., long. 8° 55' W., depth 134 metres.
- Dorypleres incrustans*, n. sp., TOPSENT, (67) p. 126, pl. ix, fig. 21, Straits of Pico-Fayal (Azores), depth 130 metres.
- Esperiopsis columnata*, p. 90, pl. v, fig. 5, & pl. x, fig. 5, Atlantic, lat. 46° 4' 40" N., long. 49° 2' 30" W., depth 1267 metres; *polymorpha*, p. 90, pl. vi, figg. 1-3, & pl. x, figg. 1-3, Atlantic, lat. 38° 23' 45" N., long. 30° 51' 30" W., depth 927 metres, and lat. 38° 22' N., long. 30° 34' 39" W., depth 736 metres; *prædita*, p. 92, pl. x, fig. 4, Atlantic, lat. 38° 22' N., long. 30° 34' 39" W., depth 736 metres; TOPSENT (67) : n. spp.
- Foliolina lendenfeldii*, n. sp., MARSHALL, Leuckart Festschr. p. 2, pl. i, & pl. vii, figg. 1-7c, locality unknown.
- Forcepia versatilis*, n. sp., TOPSENT, (67) p. 100, pl. vi, fig. 5, & pl. x, fig. 9, Atlantic, lat. 46° 4' 40" N., long. 49° 2' 30" W., depth 1267 metres.
- Gelliodes caviornis*, p. 78, pl. iii, figg. 4 & 9, & pl. ix, fig. 12, *fayalensis*,

- p. 78, pl. iii, fig. 13, & pl. ix, fig. 11, Straits between Pico and Fayal (Azores), depth 130 metres, TOPSENT (67), n. spp.
- Gellius macrosigma*, n. sp., TOPSENT, (67) p. 77, pl. ix, fig. 13, Atlantic, lat. 38° 22' N., 30° 34' 39" W., depth 736 metres.
- †*Guitarra carteri*, pl. xi, figg. 1-3, *intermedia*, figg. 4-7, p. 213, Lower Tertiary, near Oamaru, Otago, New Zealand, HINDE & HOLMES, J. L. S. xxiv, n. spp.
- Halichondria pachastrelloides*, p. 66, pl. ix, fig. 3, Atlantic, lat. 38° 22' N., long. 30° 34' 39" W., depth 736 metres, *leuconoides*, p. 67, pl. v, fig. 4, Atlantic, lat. 38° 23' 30" N., long. 30° 20' 20" W., 318 metres, TOPSENT (67), n. spp.
- Hamacantha johnsoni*, Bow., var. *complanata*, n. var., pl. ii, fig. 9, *johnsoni*, Bow., var. *inelegans*, n. var., pl. i, fig. 4, Atlantic, lat. 43° 44' 50" N., long. 8° 12' W., depth 135 metres; lat. 38° 26' 25" N., long. 30° 59' 10" W., depth 800 metres, and lat. 38° 22' N., long. 30° 34' 39" W., depth 736 metres; TOPSENT, (67) p. 86.
- Hymenaphia tuberosocapitata*, p. 113, pl. xi, fig. 6, Atlantic, lat. 38° 22' N., long. 30° 34' 39" W., depth 736 metres, *minima*, p. 114, figg. 2 & 3, Atlantic, lat. 38° 23' 30" N., long. 30° 20' 20" W., depth 318 metres, *geniculata*, p. 115, pl. 1, fig. 13, & pl. xi, figg. 4 & 5, Atlantic, lat. 38° 23' 30" N., long. 30° 20' 20" W., depth 318 metres, TOPSENT, (67) n. spp.
- †*Iophon hybridus*, n. sp., HINDE & HOLMES, J. L. S. xxiv, p. 212, pl. x, fig. 44, Lower Tertiary, Oamaru, New Zealand.
- †*Joyeuxia*, n. g., p. 93, for *J. viridis*, n. sp., p. 94, pl. ii, fig. 8, & pl. x, fig. 19, Atlantic, lat. 38° 22' N., long. 30° 34' 39" W., depth 736 metres, and lat. 39° 1' 40" N., long. 30° 15' 40" W., depth 454 metres; TOPSENT (67).
- †*Lasiodadia*? *hindei*, n. sp., ETHERIDGE, (29) p. 199, pl. xli, figg. 1 & 2.
- Latrunculia biannulata*, p. 127, Atlantic, lat. 38° 22' N., long. 30° 34' 39" W., 736 metres; *insignis*, p. 128, pl. viii, fig. 11, Atlantic, lat. 38° 22' N., long. 30° 34' 39" W., depth 736 metres; TOPSENT, (67), n. spp.
- †*L. oamaruensis*, p. 218, pl. xi, fig. 34, *obtusula*, p. 220, fig. 32, Lower Tertiary, Oamaru, New Zealand, HINDE & HOLMES, J. L. S. xxiv, n. spp.
- †*Melonanchora morlandi*, n. sp., HINDE & HOLMES, J. L. S. xxiv, p. 200, pl. ix, fig. 38, Lower Tertiary, Oamaru, New Zealand.
- Myxilla pecqueryi*, n. sp., TOPSENT, (67) p. 110, pl. x, fig. 8, Atlantic, lat. 39° 22' 48" N., long. 33° 45' 30" W., depth 1384 metres.
- Petrosia friabilis*, n. sp., TOPSENT, (67) p. 69, pl. vi, fig. 8, & pl. ix, fig. 4, Atlantic, lat. 43° 40' N., long. 8° 55' W., depth 134 metres; lat. 43° 57' N., long. 9° 27' W., depth 300 metres; lat. 38° 23' 45" N., long. 30° 51' 30" W., depth 927 metres, Straits between Pico and Fayal (Azores), depth 130 metres.
- Plumohalichondria*, Carter. TOPSENT, (67) p. 111, proposes to break up this genus into two genera, according to whether the ascending fibres are made up of smooth diactine spicules or of spined monactine spicules. The former species are included under the genus *Plumo-*

- halichondria*, the latter constitute the new genus *Stylostichon* (see below). The genus *Plumohalichondria* is accordingly defined *Ectyonina*, the main skeleton of which consists of plumose ascending fibres. The spicules of the true main skeleton are smooth diactines. Type, *Plumohalichondria mammillata*, Carter.
- Polymastina*, n. subfam. *Suberitidæ*; q.v. TOPSENT (67).
- Potamolepis barroisi*, n. sp., TOPSENT, Rev. Biol. v, pp. 85-92, 1 pl., Lake Tiberia, depth 8 metres.
- +*Pseudohalichondria deformis*, p. 214, pl. xi, figg. 8 & 9, *oamaruensis*, p. 215, figg. 12 & 13, Lower Tertiary, Oamaru, New Zealand, HINDE & HOLMES, J. L. S. xxiv, n. spp.
- Pytheas*, n. g. for *P. ater*, n. sp., p. 110, pl. i, fig. 1, & pl. xi, fig. 1, Atlantic, lat. 38° 22' N., long. 30° 34' 39" W., depth 736 metres, and including *Hymedesmia inflatus*, Bow.; TOPSENT (67).
- Raspailia* (*Syringella*) *humilis*, p. 123, pl. v, fig. 11, & pl. xi, fig. 20, Atlantic, lat. 38° 23' 30" N., long. 30° 20' 20" W., depth 318 metres, *falcifera*, p. 124, pl. vi, fig. 6, & pl. xi, fig. 19, Atlantic, lat. 38° 33' 21" N., long. 30° 28' 54" W. (between Pico and San Jorge), depth 1300 metres, TOPSENT, (67), n. spp.
- Beniera filholi*, n. sp., TOPSENT, (67) p. 70, pl. iv, fig. 7, & pl. ix, fig. 6, Atlantic, lat. 43° 40' N., long. 8° 55' W., depth 134 metres.
- Ehabderemia*, n. g., p. 115, for *R. guernei*, n. sp., p. 116, pl. xi, fig. 7, Atlantic, lat. 38° 22' N., long. 30° 34' 39" W., depth 736 metres, including also *Microcionia pusilla* and *intexta*, Carter; TOPSENT (67).
- Rhizochalina elongata*, n. sp., TOPSENT, (67) p. 75, pl. iv, figg. 5 & 6, & pl. ix, fig. 1, Atlantic, lat. 38° 23' 30" N., long. 30° 20' 20" W., depth 318 metres.
- Spanioplion*, n. g., p. 116, for *S. fertile*, n. sp., p. 117, pl. xi, fig. 11, Atlantic, lat. 38° 22' N., long. 30° 34' 39" W., depth 736 metres, TOPSENT (67).
- Spheciospongia*, n. g. for *Spheciospongia* (*Alcyonium*) *vesparum*, Lamarck, (*Suberitidæ*), MARSHALL, Leuckart Festschr. p. 32.
- Spirastrella aculeata*, n. sp., TOPSENT, (67) p. 127, pl. viii, fig. 10, Atlantic, lat. 38° 22' N., long. 30° 34' 39" W., depth 736 metres.
- Suberitidæ*, redefined by TOPSENT, (67) p. 59: *Clavulida* without microcleres derived from an aster. Two subfamilies: (a) *Suberitina*: *Suberitidæ*, without radiating structure, including the genera *Suberites*, *Weberella*, *Poterion*, *Osculina*, &c.; (b) *Polymastina*: *Suberitidæ*, the skeleton of which normally assumes a radiating structure, including the genera *Polymastia*, *Quasillina*, *Tentorium*, *Trichostemma*, *Halicnemis*, *Tethyspira*.
- Suberites capillitium*, n. sp., TOPSENT, (67) p. 130, pl. ii, fig. 10, & pl. ix, figg. 19 & 20, Atlantic, lat. 46° 4' 40" N., long. 49° 2' 30" W., depth 1267 metres.
- Suberotelides demonstrans*, n. sp., TOPSENT, (67) p. 118, pl. iv, fig. 9, & pl. xi, figg. 15-17, Atlantic, lat. 38° 22' N., long. 30° 34' 39" W., depth 736 metres.

- Stylinos*, n. g., (= *Desmacidonidae*), p. 135, for *Desmacidon pannosus*, Bwk., *incognitus*, B., *Rhaphioderma simplicissimum*, B., *Isodictya uniformis*, B., *Desmacidon columella*, B., and including *jullieni*, n. sp., Fayal, p. 137, pl. i, fig. 12, & pl. vii, figg. 11 & 12; TOPSENT (67).
- Stylostichon*, n. g., p. 111, for *Spongia plumosum*, Mont.; *Myzilla frondosum*, R. & D.; *Plumohalichondria microcionides*, Carter, and *dendyi*, n. sp., p. 112, pl. ii, fig. 6, pl. xi, figg. 9 & 10, Atlantic, lat. 38° 23' 30" N., long. 30° 20' 20" W., depth 318 metres, TOPSENT (67).
- Tedania conuligera*, n. sp., TOPSENT, (67) p. 79, pl. i, fig. 16, Atlantic, lat. 46° 50' 6" N., long. 50° 11' 45" W., depth 155 metres.
- † *Thoosa hancocki*, n. sp., HINDE & HOLMES, J. L. S. xxiv, p. 222, pl. xi, fig. 41, Lower Tertiary, Oamaru, New Zealand.
- Trachyinae*, n. subfam. (not defined) of the *Heterorrhaphidae*, for *Trachya*, Carter; TOPSENT, (67) p. 62.
- Trachya hystrix*, n. sp., TOPSENT, (67) p. 75, pl. i, figg. 8, 9, 10, & pl. xi, figg. 12, 13, 14, Atlantic, lat. 39° 1' 40" N., long. 30° 15' 40" W., depth 454 metres, and lat. 38° 23' 30" N., long. 30° 20' 20" W., depth 318 metres.
- Tragosia hirondellei*, n. sp., TOPSENT, (67) p. 120, pl. vi, fig. 7, & pl. ix, fig. 5, Atlantic, lat. 43° 40' N., long. 8° 55' W., depth 134 metres.
- Trinacophora ? spissa*, n. sp., TOPSENT, (67) p. 124, pl. vi, fig. 12, & pl. ix, fig. 9, Atlantic, lat. 38° 23' 30" N., long. 30° 20' 20" W., depth 318 metres.
- Trochospongilla horrida*, n. sp., WELTNER, SB. nat. Fr. 1893, p. 12. Synonym for *Non Spongilla erinaceus*, Ehrenberg, *Spongilla erinaceus*, Lieberkühn, &c.
- Yvesia*, n. g., p. 102, for 16 species, 8 of which are old, viz., *Cribrella elegans*, *hospitalis*, *papillosa*, O. S., *Grayella cyathophora*, Carter, *Halichondria albula*, Bwk., *Sclerilla dura*, *arctica*, Hansen, and 8 new, viz., *Y. pedunculata*, pl. v, fig. 6, & pl. x, fig. 17, Atlantic, lat. 43° 57' N., long. 9° 27' W., depth 300 metres, *guernei*, pl. iii, fig. 7 & pl. x, fig. 16, p. 105, Atlantic, lat. 43° 40' N., long. 8° 55' W., depth 134 metres, Atlantic, lat. 46° 4' 40" N., long. 49° 2' 30" W., depth 1267 metres, *fullax*, p. 106, pl. vi, fig. 13, & pl. x, fig. 14, Straits of Pico-Fayal (Azores), depth 130 metres, *hanseni*, p. 106, pl. vi, fig. 9a, & pl. x, fig. 13, Atlantic, lat. 39° 1' 40" N., long. 30° 15' 40" W., depth 454 metres, *richardi*, p. 107, pl. x, fig. 15, Atlantic, lat. 38° 22' N., long. 30° 34' 39" W., depth 736 metres, *ridleyi*, pl. x, fig. 12, Atlantic, lat. 38° 22' N., long. 30° 34' 39" W., depth 736 metres, *peritusa*, pl. iv, fig. 10, & pl. x, fig. 18, p. 107, Atlantic, lat. 39° 1' 40" N., long. 30° 15' 40" W., depth 454 metres, *linguifera*, p. 108, pl. x, figg. 10 & 11, Atlantic, lat. 38° 22' N., long. 30° 34' 39" W., depth 736 metres, TOPSENT (67).

## 5. KERATOSA.

*Aplysilla rosea*, pp. 290 & 291, *sulfurea*, pp. 284-290, pl. xii  
figg. 1-15, Triest and Lesina, redescribed; LENDENFELD, Z. wis  
Zool. liv.

*Darwinella aurea*, redescribed; LENDENFELD, t. c. pp. 278-283, pl. xii  
figg. 16-24, Lesina.

## INCERTÆ SEDIS.

†*Stellispongia*, St. Cassian, Tyrol, OGILVIE, p. 48, Q. J. Geol. Soc. xlii  
n. sp. (*sic.*)

†*Spongia*, n. g. (*sic.*), OGILVIE, l. c.

No description or illustration is given of these two Sponges.

## XVIII. PROTOZOA.

BY

R. HANITSCH, Ph.D.

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### I.—LIST OF PUBLICATIONS.\*

1. ANONYMOUS. Die neuesten Fortschritte auf dem Gebiete der Peridineen-Forschung. Naturwissenschaftliche Wochenschrift, vii, No. 18, pp. 173-179.
2. APÁTHY, S. Kritische Bemerkungen über das Frenzelsche Mesozoon *Salinella*. Eine biologische Skizze. Biol. Centralbl. xii, pp. 108-123. Abstract in Ann. N. H. (6) vi, p. 465.
3. APPELLÖFF, A. Om Bergensfjordenes faunistike præg. Bergens Mus. Aarsber. 1891.  
*Foraminifera*, p. 5.
4. APSTEIN, C. Ueber das Plankton des Süßwassers. Schr. Nat. Ver. Schleswig, ix, 2, pp. 313-316.  
*Protozoa*, p. 316.
5. BALBIANI, E. G. Nouvelles recherches expérimentales sur la mérotomie des Infusoires ciliés. Ann. Micrograph. 1892, 79 pp., 3 pls. Abstracts in J. R. Micr. Soc. 1892, pp. 803-805, and in Bibliographie Anatomique, i, No. 1, p. 15.
6. BARROIS, C. Sur la présence de fossiles dans le terrain azoïque de Bretagne. C.R. cxv, No. 6, pp. 326-328.  
Fossil *Radiolaria*.
7. BASSETT-SMITH, P. W. On the Deep-sea Deposits of the Eastern Archipelago. J. R. Micr. Soc. 1892, p. 443.

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\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

8. BERTRAM, —. Beiträge zur Kenntniss der Sarcosporidien nebst einem Anhange über parasitische Schläuche in der Leibeshöhle von Rotatorien. Zool. Jahrb. v, hft. 3 & 4, pp. 581–604, 3 pls. Abstract in J. R. Micr. Soc. 1893, p. 56.  
1 new species.
9. BIEDERMANN, R. Ueber die Structur der Tintinnen-Gehäuse. Kiel (Lipsius & Tischer): 1892, 4to, 38 pp., 3 pla.
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2 new species.
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1 new genus ; 5 new species.

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1 new species.
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1 new species.
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163. ZACHARIAS, O. Vorläufiger Bericht über die Thätigkeit der Biologischen Station zu Plön. Zool. Anz. xv (1892), pp. 457-460.  
2 new species, several undetermined.
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1 new species.
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1892. [VOL. XXIX.]

## II.—ANATOMY, BIOLOGY.

## 1. GENERAL MORPHOLOGY.

BÜTSCHLI (17) gives an account of the various opinions regarding the structure of protoplasm, and states his own views on the subject.

DREYER (39) discusses the tetraxial type of the skeleton in *Cystina* (also in *Sponges* and in *Echinodermata*), and offers many explanations.

ENTZ (40) gives a detailed account of the elastic and contractile elements of the *Vorticellinae*, especially of the large forms, *Umbellaria*, L., and *Zoothamnium arbuscula*, Eh. Covering the whole of the body there is a delicate membrane (pellicula) which has a double function: (1) it serves as attachment for the contractile elements; and (2) it is elastic, it acts as antagonist to the same. The contractile elements consist of two systems, an outer and an inner one, each again being of two layers. Thus there are altogether four layers of myonemes: an outer circular, an outer longitudinal, an inner circular, and an inner longitudinal. These layers are now described in their most minute details. The paper is illustrated by a series of very high-power drawings.

FRENZEL (47-52) gives elaborate papers on Argentine Protozoa, especially on *Rhizopoda*, *Helioamæbae*, and *Sporozoa*.

GREEFF (63) describes a thin, very flexible, resistant, and chitinous membrane, which encloses the body of *Amæba fluida*, interrupted by an opening through which the pseudopodial processes ("Zottenanhang") project.

GRUBER (67) describes abnormally small specimens of *Stentor* and *S. polymorphus*. The former had only a single nuclear joint.

KLEBS (82) describes the peripheral portion of the *Flagella*. "periblast" is the outermost plasmic layer, and is always present. Outside this there is a secondary envelope ("Hülle"), which is absent.

LEVANDER (89) describes the cuticular shell of *Glenodinium* Ehrenb., as being composed of a number of polygonal plates, as in *Glenodinium* (*tabulatum*).

RÜST (129) makes important contributions to our knowledge of *Radiolaria*, with exhaustive illustrations.

SCHLUMBERGER (137) has studied the Deep Sea *Biloculines*, by means of median sections, and describes a kind of dimorphism (the term in a sense slightly different from its customary meaning). The species may be distinguished into two forms, A and B. In the form B the chamber (microsphère) is extremely small, and is succeeded by many small chambers. The form A begins at once with a large chamber (megaspère).

SCHÜTT (142) has studied the structure of *Peridiniadae*. He distinguishes two concentric layers of plasma: an outer layer (which consists of two layers, one hyaline and the other granular), and an inner mass

is not granular, and contains nucleus, sap-chambers, and various vacuoles.

SCHILLING (134) has a paper on the structure of the freshwater *Peridiniæ*.

## 2. REPRODUCTION.

GREEFF (63) asserts that he has never noticed reproduction by means of binary fission, either in *Amaba fluida* or in any other Amœbæ. He describes phenomena which remind one of the formation of spores.

GRUBER (66) describes the formation of spores in *Arcella vulgaris* and *Lecythium hyalinum*.

KLEBS (82) says that in studying the *Flagellata* (from which he excludes the *Volvocina*), he never has seen a sexual process of reproduction. All reproduce asexually and by longitudinal fission (except *Oxyrrhis marina*, which divides transversely). Still, he thinks it possible that forms along the border line, allied to *Ciliata* or *Volvocina*, may yet be discovered which reproduce sexually.

SCHUBERG (140) has studied the reproduction of *Dasytricha ruminantium*, and of other *Ciliata*, living in the rumen and reticulum of *Ruminantia*.

SCHUBERG (141) describes the formation of spores of *Coccidia* in the stomach of a mouse.

SCHILLING (134) discusses the reproduction of the *Peridiniæ*. The rule is vegetative reproduction, and doubtful are the accounts of copulation and conjugation.

## 3. PHYSIOLOGY.

BALBIANI (5) has been experimenting on the artificial division of *Ciliata*. In merozoites which contain the whole, or part, of a nucleus, the regeneration is rapid and complete.

BRANDT (15) describes the hydrostatic apparatus of some *Protozoa*.

CERTES (19) describes his experiments on the vitality of germs of microscopic organisms. Cultivation of freshwater sediments yields by far more life (*Protozoa* and a few *Metazoa*) than that of marine sediments.

DANGEARD (30) discusses the animal-like nutrition of some *Peridiniæ*.

FRENZEL (51) gives an account of the chemistry of *Gregarinida*. He distinguishes the following substances: Protoëlastin, Alveolin, Paralveolin, neutral fats, Albuminoids, Protocollagen, Paraglycogen, Pyxinin, Antienzym, Morulin, Paramorulin, Nuclein, Nuclear Sap, Cell Sap.

GREEFF (63) gives an account of the movement and nutrition of *Amaba*.

GRIFFITHS (65) treats of *Protozoa* in the following pages: 23-30, 79, 119-123, 183, 184, 208, 246-248, 295, 296, 346-348, 375-377, & 404-408.

JENSEN (80) speaks of the Geotropism of *Protozoa*.

LAUTERBORN (86) gives some interesting sketches on the periodicity

in the appearance and reproduction of pelagic organisms in the Rhine its "Altwasser." Besides *Algae*, *Rotatoria*, *Crustacea*, *Mollusca*, he has also observed *Dinobryon*, *Ceratium hirundinella*, and other *Protozoa*.

NOLL (110) gives an account of his observations of *Trichospira sieboldii* feeding on Diatoms along the glass walls of his aquarium, reproducing rapidly.

RHUMBLER (126) shows that the so-called "Budspores" ("Keimkugeln") of *Foraminifera* are foreign bodies. They may be (1) either *Iccocconeis* (?), or (2) granules of excretory matter (?), or (3) products of decomposition of the animal. He has studied especially this third class of bodies. They are of a black colour, show sometimes a distinct crystalline structure, and consist of iron-pyrite. This agrees with the statements of geologists (e.g., Justus Roth) that a great part of the pyrites are of organic origin.

SCHILLING (135) discusses the animal-like nutrition of some *Peridinium*.

VERWORN (160) treats of the physiological significance of the life of *Protozoa*, especially of that of *Protozoa*.

*Protozoa* and Human Pathology: *Sporozoa* (or other *Protozoa*) have been demonstrated in numerous cases of Cancer. See papers by METSCHNIKOFF, PFEIFFER (120), PODWYSSOZKI, RUFFER & WILHELM SAWTSCHENKO, and SOUDAKIEWITSCH. For Malaria and *Hamatozoa* see DANILEWSKY, DOCK, GRASSI & FELETTI, HEHIR, and LAVERAN. For various other diseases, in their connections with *Protozoa*, see papers by KRUSE, MITTER, PFEIFFER, ROSENBERG, and SEVERI.

### III.—DISTRIBUTION.

#### A. FAUNISTIC.

Argentina.—*Rhizopoda*, *Heliamæba*, *Gregarinida*; FRENZEL.

Atlantic.—BORGERT treats of the geographical distribution of *Phaeodaria*, collected during the Plankton-Expedition. Richey found them in the Irminger Sea and the Labrador current; exceedingly poor in the Azores Sea, probably on account of its very high temperature. In the Gulf of Mexico, poorer off the Florida, and the East- and West-Greenland *Foraminifera*; SCHLUMBERGER.

Iceland.—Freshwater *Protozoa*; GUERNE & RICHARD.

Great Britain.—I. of Skye: *Foraminifera*; ROBERTSON.—South of Scotland: *Foraminifera*; CHASTER.—Cleethorpes: 1 *Foraminifer*; VINEY.—Plymouth: *Dinoflagellata*; BLES.—Plymouth: *Sporozoa*; MINCHIN.

Norway.—West Coast: *Foraminifera*; HERDMAN.—Bergen: *Foraminifera*; APPELLÖFF.

France.—Banyuls: *Rhizopoda*; TOPSENT.

Germany.—Holstein: Freshwater *Protozoa*; ZACHARIAS.—LEISTENBERG (90) gives a list of freshwater *Protozoa* collected near Rostock, in the Rostocker See, viz., 12 *Rhizopoda*, 4 *Heliozoa*, 45 *Flagellata*, 4 *Dinoflagellata*, 1 *Ciliata*.

- Belgium.—Ostend : Marine *Amœbæ*; GREEFF.  
 Bohemia.—*Protozoa*; FRITSCH & VÁVRA.  
 Switzerland.—Basle : *Flagellata*; KLEBS : *Dinoflagellata*; SCHILLING.  
 —Lake of Geneva : *Diffugia* and *Protozoa* generally; BLANC.  
 Italy.—Genoa : Freshwater *Protozoa*; LONGHI.—*Sporozoa*, MINGAZZINI.  
 —Lagoons of Venice : *Protozoa*, IMHOF.  
 India.—Calcutta : *Clathrulina elegans* and *Hedriocystis pellucida*; SIMMONS : *C. elegans* was first found in St. Petersburg, afterwards in Central and Western Europe, and in North America.  
 Malay Archipelago.—Freshwater *Protozoa*; SCHEWIAKOFF.  
 Japan.—Sand *Foraminifera*; DÖDERLEIN.  
 Eastern Archipelago.—Deep-sea deposits; BASSETT-SMITH.  
 Australia.—Freshwater *Protozoa*; SCHEWIAKOFF.  
 New Zealand.—Freshwater *Protozoa*; SCHEWIAKOFF.  
 Sandwich Islands.—Freshwater *Protozoa*; SCHEWIAKOFF.

## B. GEOLOGICAL.

RÜST examined all rocks from the Trias and Palæozoic strata, which were accessible to him, for *Radiolaria*. The Limestones of Palæozoic strata and Trias contained only exceedingly few *Radiolaria*, and these in a condition not suitable for identification. Exceedingly rich were numerous siliceous limestones, siliceous schists, hornstones, jasper, adinole, and wetzschiefer. The skeletons, too, were here in splendid condition.

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Laurentian or Precambrian.—Bretagne : *Radiolaria* allied to the *Monosphæridæ*. The oldest organic remains of France and probably of the world. BARROIS.

Cambrian.—St. John, New Brunswick : Species of *Monadites* and *Radiolarites*; MATTHEW.

Ordovician (?).—Mullion I. (off Lizard Peninsula, Cornwall) : Radiolarian Chert; FOX & TEALL.

Silurian.—Cabrières, Languedoc, France : *Radiolaria*, RÜST.—Scotland : *Radiolaria*, PEACH.

Devonian.—Schæbenholz, Hartz Mountains, and South Ural : *Radiolaria*, RÜST.

Carboniferous.—Hartz Mountains, Bükk Mountains in Hungary, and Sicily : *Radiolaria*, RÜST.

Permian.—Nowgorod : *Radiolaria*, RÜST.

Trias.—Astura, Felső Eörs in Bakony and Röthelstein, near Aussee, in Tyrol : *Radiolaria*, RÜST.—Saxe-Altenburg : *Rhizopoda*, H. B. GEINITZ.

Cretaceous.—Gault of Folkestone : *Foraminifera*, CHAPMAN.—Moltzow in Mecklenburg : *Foraminifera*, SCHACKO. — Priesen, Kamajk, near Časlau, and Gangberg, near Kuttendorf, Bohemia : *Foraminifera*, PERNER.—Russia : *Foraminifera*, JAKOWLEW.

Eocene.—Java: *Foraminifera*, VERBEEK.

Oligocene (Upper).—Maliss, in Mecklenburg: *Foraminifera*, E. GEIN.

Miocene.—Java, Sumatra, and Nias: *Foraminifera*, VERBEEK.—Kui Mühle, near Dingden, Germany: *Foraminifera*, HOSIUS.—Apennine near Modena: *Foraminifera*, MALAGOLI.—(Miocene?) Radiolarian R from Fanny Bay, Port Darwin, Australia; HINDE.

Pliocene.—Near River Arno, Italy: *Foraminifera* and *Radiolaria* CORTI.—Castellarquato and Lugagno, near Piacenza: *Foraminifera* MALAGOLI.—Italy: *Foraminifera*, FORROSINI.—Villarvernia, Italy: *Foraminifera*, DERVIEUX.—Volcanic tuf of Viterbo, Italy: *Foraminifera*, MARIANI.

#### IV.—SYSTEMATIC.

##### A.—GYMNOMYXA.

###### Class 3.—LOBOSA.

*Amaba fluida*, Gruber, pp. 24–41, *crystalligera*, pp. 41–43, Osteo redescrbed by GREEFF, SB. Ges. Marb. 1892.

*A. hercules*, p. 24, pl. iii, figg. 10, 11, & 17, *pellucida*, p. 29, pl. i, figg. 3 Argentina, FRENZEL, Bibl. Zool. xii, n. spp.

*Diffugia lemani*, Lake Lemán; BLANC (12), p. 5, pl. ii, figg. 13–15, n. *Guttulidium*, n. g. with *G. tinctum*, & sp., Argentina; FRENZEL, Bibl. Zool. xii, p. 1, pl. iii, figg. 7 & 8.

*Limulina*, n. g. with *L. unica*, & sp., Argentina; FRENZEL, Bibl. Zool. xii, p. 41, pl. iii, fig. 9.

*Mastigamæba schulzei*, Argentina; FRENZEL, Bibl. Zool. xii, p. 49, pl. iii, figg. 1–14.

*Mastigella*, n. g. with *M. polymastix*, & sp., Argentina; FRENZEL, Bibl. Zool. xii, p. 38, pl. ii, fig. 3.

*Mastigina*, n. g. with *M. chlamys*, p. 42, pl. iv, figg. 3–7, *paramylon*, p. 42, pl. ii, fig. 7, n. spp., Argentina, FRENZEL, Bibl. Zool. xii.

*Micromastix*, n. g. with *M. januarii*, & sp., Argentina; FRENZEL, Bibl. Zool. xii, p. 37, pl. ii, fig. 8.

*Pontomyxa*, n. g. with *P. flava*, & sp. Banyuls, France, on *Microcosma sabatieri*; TOPSENT, C.R. cxiv, p. 774.

*Saccamæba*, n. g. with *S. punctata*, p. 2, pl. iii, figg. 5 & 6, *lucens*, p. 2, pl. i, fig. 11, *magna*, p. 8, pl. iii, fig. 19, *cubica*, p. 13, pl. iv, figg. 12 & 13, *morula*, p. 14, pl. i, fig. 10, *renacuajo*, p. 16, pl. i, figg. 7 & 8, *cirrifera*, p. 11, pl. ii, fig. 6, n. spp., Argentina, FRENZEL, Bibl. Zool. xii.

*Tricholimna*, n. g. with *T. hylae*, & sp., Argentina; FRENZEL, Bibl. Zool. xii, p. 35, pl. iii, figg. 2–4.

## Class 5.—HELIOZOA.

- Actinophrys alveolata*, Sydney, SCHEWIAKOFF, Verh. Ver. Heidelb. (n.s. iv, p. 549, n. sp.
- Astrodisculus araneiformis*, Melbourne, SCHEWIAKOFF, Verh. Ver. Heidelb. (n.s.) iv, p. 549, n. sp.
- Elæorhans arenosa*, Argentina, FRENZEL, Bibl. Zool. xii, p. 72, pl. vi, fig. 12, n. sp.
- Estrella*, n. g. with *E. aureola*, p. 74, pl. vi, fig. 16, *socialis*, p. 75, pl. vi, figg. 5 & 7, n. spp., Argentina, FRENZEL, Bibl. Zool. xii.
- Heliosphaerium*, n. g. with *H. aster*, p. 76, pl. vi, figg. 10 & 11, and pl. x, fig. 4, *polyedricum*, p. 79, pl. vi, figg. 6, 9, & 17, and pl. x, fig. 5, n. spp., Argentina, FRENZEL, Bibl. Zool. xii.
- Lithospharella*, n. g. with *L. compacta*, & sp., Argentina, FRENZEL, Bibl. Zool. xii, p. 73, pl. vi, figg. 13 & 15.
- Monobia solitaria*, Sandwich Is., Oahu, SCHEWIAKOFF, Verh. Ver. Heidelb. (n.s.) iv, p. 548, n. sp.
- Nuclearella*, n. g. with *N. variabilis*, & sp., Argentina, FRENZEL, Bibl. Zool. xii, p. 63, pl. i, figg. 1 & 2, pl. ii, figg. 1, 2, & 10, and pl. iv, fig. 16.
- Nuclearia polypodia*, Malay Archipelago, Bali, SCHEWIAKOFF, Verh. Ver. Heidelb. (n.s.) iv, p. 548, n. sp.
- Nuclearina*, n. g. with *N. leuckarti*, & sp., Argentina, FRENZEL, Bibl. Zool. xii, p. 59, pl. vi, figg. 4, 8, & 18.

## Class 6.—RETICULARIA.

- Amphicoryne parasitica*, SCHLUMBERGER, Mém. Soc. Zool. v, p. 211, pl. vii, figg. 10–12, Azores, depth 130 metres, n. sp.
- Biloculina sarsi*, p. 553, pl. ix, figg. 55–59, woodcuts 10–12, North Sea, 2000 faths.; *labiata*, p. 556, pl. ix, figg. 60–62, woodcuts 13 & 14, Mediterranean, 555 metres; *bradyi*, p. 557, pl. x, figg. 63–71, woodcuts 15–19, Atlantic, Bay of Biscay, 1850 metres; *vespertilio*, p. 561, pl. x, figg. 74–76, woodcuts 20–22, Bay of Biscay, 1850 metres; *fischeri*, p. 563, pl. xi, figg. 77 & 78, woodcuts 23–25, Bay of Biscay, 1850 metres; *milne-edwardsi*, p. 567, pl. xi, figg. 79 & 80, woodcuts 29 & 30; *pisum*, p. 569, pl. xi, figg. 81–83, woodcut 31, Mediterranean; *anomala*, p. 569, pl. xi, figg. 84–86, and pl. xii, fig. 101, woodcuts 32–34, Mediterranean, 555 metres; SCHLUMBERGER, Mém. Soc. Zool. iv : n. spp.
- † *Bolivinopsis*, n. g. and *B. capitata*, Cretaceous, Russia; JAKOWLEW, Trav. Soc. Univ. Karkow, xxiv, p. 349, n. sp.
- † *Bulimina breviconica*, p. 54, pl. iv, figg. 1 *a*, *b*, *inflata*, p. 55, pl. iii, figg. 4 *a*, *b*, *c*, *conoides*, p. 55, pl. iii, figg. 5 *a*, *b*, *depressa*, p. 55, pl. iii, figg. 3 *a*, *b*, Cenoman, Kamajk, Bohemia, PERNER, Palæontographica Bohemiæ, i : n. spp.
- † *B. presli*, Reuss, var. *sabulosa*, n. var.; CHAPMAN, J. R. Micr. Soc. 1892, p. 755, pl. xii, fig. 5, Gault of Folkestone.



- Clavulina obscura*, Shore mud of Southport, CHASTER, Rep. South Soc. i, p. 58, pl. i, fig. 4, n. sp.
- Discorbina minutissima*, Shore mud of Southport, CHASTER, Rep. South Soc. i, p. 65, pl. i, fig. 15, n. sp.
- †*Fronicularia fritschi*, p. 58, pl. vii, figg. 1 *a, b, c*, Cenoman, Kamajk Bohemia, *coronata*, p. 58, pl. vii, figg. 2 *a, b*, Cenoman, Kamajk Bohemia, *linea*, p. 59, pl. vii, figg. 3 *a, b*, *parallela*, pl. 59, pl. vii, fig. 4 *a, b*, Kamajk, *obsoleta*, p. 59, pl. vii, figg. 6 *a, b*, *conica*, p. 59, pl. vii, figg. 7 *a, b*, *bohémica*, p. 60, pl. vii, fig. 4, *quadrigona*, p. 60, pl. vii, fig. 5 *a, b*, *incerta* (n. sp. ?), p. 60, pl. vii, figg. 10 *a, b*, *gracilis*, p. 60, pl. vii, fig. 9, *lanceolata*, p. 60, pl. vii, figg. 12 *a, b*, *foliaceae*, p. 61, pl. vii, figg. 13 *a, b*, *acutangula*, p. 61, pl. vii, fig. 11, Kamajk, PERNER, Palæontographica Bohemiæ, i : n. spp.
- †*Gaudryina dispansa*, Gault of Folkestone, CHAPMAN, J. R. Micr. Soc. 1892, p. 753, pl. xi, figg. 10 *a, b*, n. sp.
- †*Haplophragmium elegans*, n. sp., p. 322, pl. v, fig. 10, *H. latidorsæ* Born, var. *papillosa*, n. var., p. 323, pl. v, fig. 13, Gault of Folkestone; CHAPMAN, J. R. Micr. Soc. 1892.
- †*Haplostiche oligostegia*, PERNER, Palæontographica Bohemiæ, i, p. 324, pl. ii, figg. 13 & 14, Cenoman, Gangberg, Bohemia; *H. sherborni* Gault of Folkestone, CHAPMAN, J. R. Micr. Soc. 1892, p. 325, p. figg. 6-8 : n. spp.
- Lagena millettii*, p. 61, pl. i, fig. 10, *falcata*, p. 61, pl. i, fig. 7, *depressa*, p. 62, pl. i, fig. 5, *protea*, p. 62, pl. i, fig. 14, Shore mud, Southport, CHASTER, Rep. South Soc. i, n. spp.
- Lingulina herdmanni*, Shore mud, Southport, CHASTER, Rep. South Soc. i, p. 63, pl. i, fig. 9, n. sp.
- †*Lituola cylindrica*, p. 52, pl. ii, figg. 7-12, Cenoman, Kamajk, Bohemia, *globigerinoides*, p. 52, pl. ii, figg. 15-17, PERNER, Palæontographica Bohemiæ, i, n. spp.
- †*Miliolina maggii*, Pliocene, River Arno, CORTI, p. 66, fig. 1a, n. sp. scient. xiv, n. sp.
- †*Nodosaria longispina*, Cretaceous, Russia, JAKOWLEW, Trav. Soc. U. Kharkow, p. 343; *N. mayeri*, Cretaceous, Bohemia, PERNER, Böhm. Ges. 1892, p. 43; *cryptostegia*, p. 56, pl. vi, fig. 2, Cenoman, Kamajk, Bohemia, *clavata*, p. 56, fig. 4, *subnodosa*, p. 57, fig. 5, *pseudaffinis*, p. 57, figg. 6 *a, b*, *bohémica*, p. 57, figg. 7-9, *diversa*, p. 57, fig. 11, Kamajk, PERNER, Palæontographica Bohemiæ, i, n. spp.
- †*Nummulites juvenus*, Java, VERBEEK, Nat. Tijdschr. Nederl. Ind. p. 105, pl. i, figg. 1-3, n. sp.
- †*Polymorphina orbignii*, Zbor. sp., *cercicornis*, n. var., Gault of Folkestone; CHAPMAN, Geol. Mag. (n.s.) (3) ix, p. 54, pl. ii, figg. 5 & 6.
- Psammonyx*, n. g. with *P. vulcanicus*, & sp., Sagami Bay, Japan, 100 faths.; DÖDERLEIN, Verh. deutsch. Zool. Ges. ii, p. 145.
- Pulvinulina nitidula*, Shore mud, Southport, CHASTER, Rep. South Soc. i, p. 66, pl. i, fig. 17, n. sp.

- Ramulina grimaldii*, Fosse de Fayal, between Fayal and Pico (Azores), 130 metres, SCHLUMBERGER, Mém. Soc. Zool. iv, p. 509, pl. v, n. sp.
- † *Reophax lageniformis*, p. 319, pl. v, figg. 1 a, b, *folkestoniensis*, p. 321, pl. v, figg. 6 a, b, *cylindræa*, p. 321, pl. v, figg. 7 a, b, Gault of Folkestone, CHAPMAN, J. R. Micr. Soc. 1892, n. spp.
- Rheophax scotti*, Shore mud, Southport, CHASTER, Rep. Southport Soc. i, p. 57, pl. i, fig. 1, n. sp.
- † *Rotalia evoluta*, Pliocene, River Arno, CORTI, Boll. scient. xiv, p. 67, figg. 2 a, n. sp.
- † *Spirillina minima*, p. 159, pl. i, fig. 4, *trochiformis*, p. 159, pl. i, fig. 3, Cretaceous, Helle Mühle near Moltzow, Mecklenburg; SCHACKO, Arch. Ver. Mecklenb. xlv.
- † *Spiroculina*, n. sp., SCHACKO, Arch. Ver. Mecklenb. xlv, p. 158, pl. i, fig. 1, Cretaceous, Helle Mühle near Moltzow, Mecklenburg.
- Textularia fusiformis*, Shore mud, Southport, CHASTER, Rep. Southport Soc. i, p. 58, pl. i, fig. 3, n. sp.
- † *T. brevicoma*, p. 54, pl. ix, fig. 12, *parallela*, p. 54, pl. ix, fig. 13, Cenoman, Kamajk, Bohemia, PERNER, SB. Böhm. Ges. 1892, n. spp.
- Trichosphærium sieboldii*, Schn., belongs, according to GREEFF, Zool. Anz. xv, (1892) pp. 62–64, to the monothalamous *Foraminifera*.
- Triloculina aspergillum*, Azores, SCHLUMBERGER, Mém. Soc. Zool. v, p. 207, pl. viii, figg. 8 & 9, 1 woodcut, n. sp.
- † *Trochammina concava*, Gault of Folkestone, CHAPMAN, J. R. Micr. Soc. 1892, p. 327, pl. vi, figg. 14 a, b; *T. serpuloides*, Cretaceous, Helle Mühle near Moltzow, Mecklenburg, SCHACKO, Arch. Ver. Mecklenb. xlv, p. 159, pl. 1, fig. 5 : n. spp.
- † *Vitriwebbina*, n. g. with *V. sollasi*, & sp., Gault of Folkestone; CHAPMAN, Geol. Mag. (3) ix, p. 53, pl. ii, figg. 1–3.

## Class 7.—RADIOLARIA.

- † *Acantosphæra entactinia*, p. 147, pl. xiii, fig. 1, Carboniferous, Hartz Mountains, *A. macracantha*, Silurian, Cabrières, p. 147, pl. xiii, fig. 2, RÜST, Palæontogr. xxxviii, n. spp.
- † *Acrosphæra herzynica*, Devonian, Schæbenholz, p. 140, pl. ix, fig. 3, *A. glitzii*, Carboniferous, Hartz Mountains, p. 140, pl. ix, fig. 2, RÜST, Palæontogr. xxxviii, n. spp.
- † *Actinomma schæbenholzianum*, Carboniferous, Hartz Mountains, RÜST, Palæontogr. xxxviii, p. 148, pl. xiv, fig. 5, n. sp.
- † *Amphibrachium inæquale*, p. 170, pl. xxiii, fig. 10, *A. bacillum*, p. 169, pl. xxiii, fig. 9, *A. pulchellum*, p. 169, pl. xxiii, fig. 8, Devonian, South Ural, *A. devoniense*, Carboniferous, South Ural, p. 169, pl. xx, fig. 8, *A. desecatum*, Carboniferous, Sicily, p. 169, pl. xx, fig. 9, RÜST, Palæontogr. xxxviii; † *A. crassum*, pl. v, fig. 9, *truncatum*, fig. 10, *fragile*, fig. 11, p. 223, Fanny Bay, Port Darwin, HINDE, Q. J. Geol. Soc. xlix : n. spp.
- † *Amphymenium alienum*, pl. xxiv, fig. 2, *A. krautii*, fig. 1, Devonian, Schæbenholz, RÜST, Palæontogr. xxxviii, p. 170, n. spp.

- + *Arctinoceros* *lem.* Carboniferous, Hartz Mountains, Rüst, Palæont. xxxviii, p. 144, pl. xii, fig. 5, n. sp.
- + *Asellipes impunctulata* Carboniferous, Sicily, Rüst, Palæont. xxxviii, p. 152, pl. xvi, fig. 6, n. sp.
- Cannegieter prunulina*, Atlantic, BORGERT, Ergeb. Plankt. Exp. p. pl. vi, fig. 4, n. sp.
- + *Cannegieter macrostoma*, pl. vii, fig. 3. *C. jejuna*, fig. 1, *C. macrost.* fig. 4. *C. neptun.* fig. 2, p. 135. Carboniferous, Hartz Mountains, Rüst, p. 135, pl. vi, fig. 13, Carboniferous, Hartz Mountains, Sicily, Rüst, Palæontogr. xxxviii, n. spp.
- + *Cannegieter globosus*, Devonian, Schæbenholz, Rüst, Palæont. xxxviii, p. 135, pl. ix, fig. 1, n. sp.
- + *Cannegieter infundibulata*, Carboniferous, Sicily, p. 184, pl. xxvii, 19, *C. albigera*, Permian, Nowgorod, p. 183, fig. 9, Rüst, Palæont. xxxviii, n. spp.
- + *Cannegieter discipora*, Silurian, Cabrières, p. 151, pl. xv, fig. 5. *C. fovea*, Devonian, Schæbenholz, p. 152, pl. xvi, fig. 1, *C. pusilla*, 1 Rötbelstein, pl. xvi, fig. 5, *C. erolata*, pl. xv, fig. 10, *C. citra*, f. p. 151, Devonian, South Ural. *C. multiplex*, Carboniferous, Hartz Mountains, pl. xvi, fig. 3, *C. reticulosa*, Carboniferous, Hartz Mountains, fig. 2, *C. cypridina*, pl. xv, fig. 9, p. 152, *C. rectipora*, fig. 7, *C. reticulata*, fig. 7, Devonian, South Ural, *C. peroxalis*, Carboniferous, Hartz Mountains, pl. xvi, fig. 4, p. 151, Rüst, Palæont. xxxviii, n. spp.
- + *Cannegieter intermedium*, pl. xix, fig. 10. *C. nummularis*, fig. 9, p. 162, Carboniferous, Hartz Mountains, *C. primordialis*, Silurian, Cabrières, p. 151, fig. 5, Rüst, Palæontogr. xxxviii, n. spp.
- + *Cannegieter asturana*, Trias, Astura, pl. vi, fig. 7, *C. bakonyana*, 1 Felső Etra Bakony, fig. 4, *C. carbonica*, fig. 2, *C. ingens*, fig. 8, Carboniferous, Hartz Mountains, *C. castanea*, Devonian, Schæbenholz, Hartz Mountains, fig. 5, *C. wralensis*, fig. 3, *C. rossica*, fig. 9, p. 135, Devonian, South Ural, *C. macropora*, f. p. 134, Silurian, Cabrières, Rüst, Palæontogr. xxxviii, n. spp.
- Challengeron rothenburgi*, pl. vi, fig. 1, *neptuni*, p. 180, figg. 2 & 3, Irmi Sea, Atlantic, BORGERT, Ergeb. Plankt. Exp., n. spp.
- + *Cornutanna cornu-taccinum*, Trias, Rötbelstein, pl. xxvi, fig. 1 dilatata, fig. 12. *C. macropora*, fig. 13, Carboniferous, Sicily, f. Palæontogr. xxxviii, p. 180, n. spp.
- + *Cromyodruppa prunulina*, Carboniferous, Sicily, Rüst, Palæont. xxxviii, p. 157, pl. xviii, fig. 5, n. sp.
- + *Cromyomma grandærum*, Silurian, Cabrières, Rüst, Palæontogr. xx, p. 149, pl. xiv, fig. 7, n. sp.
- + *Cromyosphaera alternans*, Carboniferous, Sicily, pl. viii, fig. 7, *C. dis.* Devonian, South Ural, fig. 6, *C. eminens*, fig. 8, p. 139, *C. frequens*, *C. radiata*, Carboniferous, Hartz Mountains, fig. 5, *C. petse.* Carboniferous, Ural, pl. viii, fig. 3, *C. prisca*, Silurian, Cabrières, fig. 4, p. 138, Rüst, Palæontogr. xxxviii, n. spp.

- † *Crucildiscus præcursor*, Silurian, Cabrières, Rüst, Palæontogr. xxxviii, p. 163, pl. xx, fig. 6, n. sp.
- † *Cyphanta piscis*, p. 160, pl. xix, fig. 5, *C. quiniseriata*, p. 161, fig. 6, Devonian, South Ural, Rüst, Palæontogr. xxxviii, n. spp.
- † *Cyrtoculpis serieporata*, pl. xxvi, fig. 16, *C. obtusa*, fig. 15, Devonian, South Ural, *C. prima*, fig. 14, Carboniferous, Hartz Mountains, Rüst, Palæontogr. xxxviii, p. 180, n. spp.
- † *Dictyocephalus ventricosus*, Carboniferous, Sicily, Rüst, Palæontogr. xxxviii, p. 182, pl. xxvii, fig. 5, n. sp.
- † *Dictyomitra magnifica*, pl. xxix, fig. 1, *D. micropora*, pl. xxviii, fig. 11 & pl. xxix, fig. 2, p. 188, Carboniferous, Sicily, *D. pumilio*, Devonian, Schæbenholz, pl. xxviii, fig. 10, p. 187, *D. sasina*, Siliceous Limestone, Astura, p. 188, pl. xxix, fig. 4, Rüst, Palæontogr. xxxviii; *D. australis*, pl. v, fig. 14, *triangularis*, pl. v, fig. 15, Fanny Bay, Port Darwin, HINDE, p. 224, Q. J. Geol. Soc. xlix : n. spp.
- † *Dictyophimus dubius*, Carboniferous, Sicily, Rüst, Palæontogr. xxxviii, p. 181, pl. xxvii, fig. 3, n. sp.
- † *Dizonium laeve*, Carboniferous, Sicily, Rüst, Palæontogr. xxxviii, p. 174, pl. xxv, fig. 8, n. sp.
- † *Druppatractus dictyococcus*, Carboniferous, Hartz Mountains, Rüst, Palæontogr. xxxviii, p. 158, pl. xviii, fig. 9, n. sp.
- † *Druppula amygdalina*, Carboniferous, Petschora, p. 155, pl. xvii, fig. 7, *D. angustiporata*, pl. xviii, fig. 1, *D. cornus*, fig. 2, p. 156, Carboniferous, Bükk Mountains, *D. andreana*, pl. xvii, fig. 5, p. 155, *D. berberis*, fig. 11, *D. crucifera*, fig. 10, p. 156, *D. endechinata*, fig. 9, p. 155, *D. fixata*, Carboniferous, Sicily, fig. 12, p. 156, *D. pomatia*, Trias, Astura, fig. 6, *D. cembra*, Devonian, South Ural, fig. 8, p. 155, *D. silurica*, Silurian, Langenstrieß, fig. 4, p. 154, Rüst, Palæontogr. xxxviii, n. spp.
- † *Dystympanium carbonicum*, Carboniferous, Sicily, Rüst, Palæontogr. xxxviii, p. 177, pl. xi, fig. 9, n. sp.
- † *Echinomma oligacanthum*, Carboniferous, Sicily, Rüst, Palæontogr. xxxviii, p. 149, pl. xiv, fig. 6, n. sp.
- † *Ellipsidium aculeatum*, p. 152, pl. xvi, fig. 7, *E. spinosum*, p. 153, pl. xvii, fig. 1, Carboniferous, Hartz Mountains, Rüst, Palæontogr. xxxviii, n. spp.
- † *Ellipsostylus obliquus*, Carboniferous, Sicily, Rüst, Palæontogr. xxxviii, p. 153, pl. xvi, fig. 11, n. sp.
- † *Ellipsoxiphus hystrix*, Carboniferous, Hartz Mountains, pl. xvi, fig. 10, *E. procerus*, Carboniferous, Lerbach, fig. 9, Rüst, Palæontogr. xxxviii, p. 153, n. sp.
- Euphysetta lucani*, Atlantic, BORGERT, Ergeb. Plankt. Exp., p. 182, pl. vi, fig. 8, n. sp.
- † *Halicalyptra aculeata*, Carboniferous, Petschora, Rüst, Palæontogr. xxxviii, p. 179, pl. xxvi, fig. 7, n. sp.
- † *Halicapsa megapora*, Carboniferous, Sicily, Rüst, Palæontogr. xxxviii, p. 181, pl. xxvii, fig. 2, n. sp.

- Heliolites speciosus*. Carboniferous. Sicily, pl. xiv, fig. 2. *H. pectus*. Carboniferous. Hartz Mountains, pl. xiii, fig. 4, R&S, Palaeontogr. xxxviii. 1 spp.
- Heliolites ornatus*. Silurian, Cabrières, pl. xxii, fig. 1. *H. viti*. Carboniferous. Hartz Mountains, fig. 2. R&S, p. 165, Palaeontogr. xxxviii. 1 spp.
- Heliolites nigerrimus*. Carboniferous, Hartz Mountains, pl. xiv *H. pectus*. Silurian. Cabrières, fig. 3. R&S, p. 184. Palaeontogr. xxxviii. 1 spp.
- Heliolites verticatus*. pl. xii, fig. 3. *H. lyrae*. pl. xiv, fig. 1. Carboniferous. Hartz Mountains. R&S. Palaeontogr. xxxviii.
- Heliolites viti*. Carboniferous, Bükk Mountains, R&S, Palaeontogr. xxxviii. p. 172. pl. xiv, fig. 5. n. sp.
- Heliolites pectus*. Devonian. Schœnholz, pl. xii, fig. 7. *H. Carboniferous*. Sicily, fig. 4, p. 145, R&S. Palaeontogr. xxxviii.
- Lophites acuminatus*. Devonian. South Ural, pl. vii, fig. 5, *L. Silurian*. Cabrières, fig. 6, p. 136. R&S, Palaeontogr. xxxviii, 1
- Lophites acutus*. Silurian. Cabrières, R&S, Palaeontogr. 1 p. 134. pl. xvii, fig. 3. n. sp.
- Lophites irregularis*. pl. xviii, fig. 7. *L. perforatus*, p. 158, pl. fig. 4. Carboniferous. Sicily. *L. major*. Carboniferous, Hartz Mountains, fig. 4, p. 157. R&S. Palaeontogr. xxxviii, n. spp.
- Lophites apiculatus*. Carboniferous. Hartz Mountains, R&S, Palaeontogr. xxxviii. p. 172. pl. xvii, fig. 1 & 2. n. sp.
- Lophites sinensis*. pl. xix, fig. 5. *L. tchermytschenkii*, fig. 8, *L. uralskensis*, fig. 5, p. 158. Devonian. South Ural, *L. o Siliceous Limestone*. R&S. p. 193, fig. 7, *L. pyramis*, *L. sp. irregularis*, fig. 9. *L. stenotoma*, p. 189, fig. 10, Carboni Sicily. *L. major*. Carboniferous, Bükk Mountains, p. 190, R&S. Palaeontogr. xxxviii : *L. fusiformis*, Port Darwin, 1 Q. J. Geol. Soc. xlix. p. 225. pl. v. fig. 16. : n. spp.
- Lophites nassensis*. Devonian, Schœnholz, pl. xxii, fig. 4, *L. Carboniferous*, Hartz Mountains, pl. xxii, fig. 3, p. 166. Palaeontogr. xxxviii : *L. exilis*. Fanny Bay. Port Darwin, 1 Q. J. Geol. Soc. xlix. p. 223. pl. v. fig. 8. : n. spp.
- Lophites bipolaris*. Carboniferous. Hartz Mountains, p. 154. fig. 12, *L. leontostoma*, Silurian, Langenstriegis, fig. 8, p. 154. *exilis*. Devonian. Schœnholz. p. 154. pl. xvii, fig. 2. Palaeontogr. xxxviii. n. spp.
- Lophites fortis*. Siliceous Limestone. R&S. Palaeontogr. xxxviii. p. 158. pl. xix. fig. 3. n. sp.
- Lophites major*. Carboniferous. Sicily. R&S. Palaeontogr. 1 p. 157. pl. xviii, fig. 9. n. sp.
- Glyptophya orbiculata*. Silurian, Cabrières. R&S, Palaeontogr. xxxviii. p. 143, pl. ix, fig. 4, n. sp.
- Pect. stem primitivum*, Carboniferous, Bükk Mountains, 1. xxxviii, p. 172, pl. xxiv, fig. 8, n. sp.

- † *Peripanartus deficiens*, Devonian, South Ural, Rüst, Palæontogr. xxxviii, p. 161, pl. xix, fig. 7, n. sp.
- † *Phenoscenium excentricum*, Carboniferous, Hartz Mountains, Rüst, Palæontogr. xxxviii, p. 179, pl. xxvi, figg. 8–10, n. sp.
- † *Phorticium macropylium*, Silurian, Langenstriegis, Rüst, Palæontogr. xxxviii, p. 175, pl. xxvi, figg. 4 & 5, n. sp.
- † *Porodiscus cabrierensis*, Silurian, Cabrières, pl. xxiii, fig. 3, *P. intricatus*, p. 168, fig. 5, *P. rossicus*, pl. xxii, fig. 6, p. 168, Devonian, South Ural, *P. paronæ*, pl. xxiii, fig. 2, *P. parvulus*, pl. xxii, fig. 7, p. 167, *P. subspiralis*, p. 168, pl. xxiii, fig. 4, Muschelkalk, Felsö Eörs, *P. triassicus*, Muschelkalk, Röthelstein, p. 167, fig. 1, Rüst, Palæontogr. xxxviii, n. spp.
- † *Prismatium paradietum*, Carboniferous, Sicily, Rüst, Palæontogr. xxxviii, p. 178, pl. x, fig. 10, n. sp.
- † *Prunulum armeniacum*, Devonian, Schæbenholz, pl. xviii, fig. 4, *P. murrayi*, Carboniferous, Hartz Mountains, fig. 3, p. 157, Rüst, Palæontogr. xxxviii, n. spp.
- † *Pterocanium tenuescostatum*, Carboniferous, Sicily, Rüst, Palæontogr. xxxviii, p. 183, pl. xxvii, fig. 8, n. sp.
- † *Rhizoplegma betulinum*, Carboniferous, Sicily, Rüst, Palæontogr. xxxviii, p. 150, pl. xv, fig. 2, n. sp.
- † *Rhodosphæra crucifera*, Carboniferous, Hartz Mountains, pl. vii, fig. 11, *R. idonea*, fig. 9, p. 137, *R. pulchra*, p. 138, pl. viii, fig. 1, Carboniferous, Sicily, *R. devoniensis*, Devonian Schæbenholz, p. 137, pl. vii, fig. 10, Rüst, Palæontogr. xxxviii, n. spp.
- † *Rhopalastrum carbonicum*, Carboniferous, Hartz Mountains, p. 170, pl. xxiv, fig. 3, *R. giganteum*, fig. 6, *R. isselii*, fig. 5, *R. siculum*, fig. 4, p. 171, Carboniferous, Sicily, Rüst, Palæontogr. xxxviii, n. spp.
- † *Rhopalodictyum astrictum*, Devonian, Schæbenholz, Rüst, Palæontogr. xxxviii, p. 171, pl. xxv, fig. 7, n. sp.
- † *Sethocapsa obstipa*, Devonian, South Ural, p. 182, pl. xxvii, fig. 6, *S. oclusiva*, Muschelkalk, Felsö Eörs, p. 183, fig. 7, Rüst, Palæontogr. xxxviii, n. spp.
- † *Sethocyrtis excisa*, Carboniferous, Hartz Mountains, Rüst, Palæontogr. xxxviii, p. 182, pl. xxvii, fig. 4, n. sp.
- † *Sethostaurus exsculptus*, Silurian, Cabrières, Rüst, Palæontogr. xxxviii, p. 165, pl. xxi, fig. 7, n. sp.
- † *Sphæropyle*, n. g., Dreyer, p. 140, with † *S. dreyeri*, p. 141, pl. ix, fig. 6, *S. laevis*, p. 140, fig. 5, Devonian, South Ural, *S. entostoma*, fig. 9, *S. eurystoma*, fig. 8, Carboniferous, Sicily, *S. multangularis*, Carboniferous, Hartz Mountains, fig. 7, p. 141, Rüst, Palæontogr. xxxviii, n. spp.
- † *Spirocapsa*, n. g. for † *S. singularis*, n. sp., Carboniferous, Sicily; Rüst, Palæontogr. xxxviii, p. 192, pl. xxx, fig. 13.
- † *Spironium hækeli*, Carboniferous, Hartz Mountains, Rüst, Palæontogr. xxxviii, p. 175, pl. xxvi, fig. 3, n. sp.



- †*Stichocapsa anguillula*, pl. xxx, fig. 11, *S. elpenor*, p. 192, fig. 10, *S. tænia*, pl. xxx, fig. 12, p. 192, Devonian, South Ural, *S. biceps*, fig. 7, *S. citriformis*, fig. 8, *S. ellipsoides*, fig. 6, *S. gravis*, fig. 1, *pupa*, fig. 9, Carboniferous, Sicily, *S. bükkiana*, Carboniferous, Bükk Mountains, fig. 5, p. 191, Rüst, Palæontogr. xxxviii; *S. pinguis*, pl. v, fig. 17, *S. chrysalis*, pl. v, fig. 18, p. 225, Port Darwin, Hinde, Q. J. Geol. Soc. xlix : n. spp.
- †*Stichopera aculeata*, Carboniferous, Sicily, Rüst, Palæontogr. xxxviii, p. 186, pl. xxviii, fig. 7, n. sp.
- †*Stigmosphæra mira*, pl. vi, fig. 11, *S. rothpletzii*, fig. 10, *S. suspecta*, fig. 12, Carboniferous, Hartz Mountains, Rüst, Palæontogr. xxxviii, p. 135, n. spp.
- †*Stigmosphærostylus*, n. g. for *S. notabilis*, n. sp., Carboniferous, Hartz Mountains, Rüst, Palæontogr. xxxviii, p. 142, pl. x, fig. 2.
- †*Stilodictya polaris*, p. 169, pl. xxv, fig. 1, *S. zittelii*, p. 168, pl. xxiii, figg. 6 & 7, Devonian, Schæbenholz, Rüst, Palæontogr. xxxviii, n. spp.
- †*Stylodiscus dictyosus*, Carboniferous, Hartz Mountains, Rüst, Palæontogr. xxxviii, p. 162, pl. xx, fig. 1, n. sp.
- †*Stylosphæra acuta*, Carboniferous, Hartz Mountains, Rüst, Palæontogr. xxxviii, p. 142, pl. x, fig. 3, n. sp.
- †*Stylotrochus dofussi*, Carboniferous, Sicily, Rüst, Palæontogr. xxxviii, p. 173, pl. xxv, fig. 5, n. sp.
- †*Tetrapylonium ovatum*, Carboniferous, Sicily, Rüst, Palæontogr. xxxviii, p. 174, pl. xxv, fig. 9, n. sp.
- †*Thecosphæra sexactis*, Carboniferous, Hartz Mountains, pl. vii, fig. 8, *P. sicula*, Carboniferous, Sicily, fig. 7, Rüst, p. 137, Palæontogr. xxxviii, n. spp.
- †*Theocampe bulbosa*, Carboniferous, Sicily, Rüst, Palæontogr. xxxviii, p. 185, pl. xxvii, fig. 12, n. sp.
- †*Theocyrtis apis*, Muschelkalk, Astura, Rüst, Palæontogr. xxxviii, p. 184, pl. xxvii, fig. 11, n. sp.
- †*Theodiscus brachyacanthus*, pl. xx, fig. 2, *T. convexus*, fig. 3, Carboniferous, Hartz Mountains, *T. gigas*, fig. 4, *T. planus*, fig. 5, Silurian, Cabrières, Rüst, p. 163, Palæontogr. xxxviii, n. spp.
- †*Theosyringium præcox*, Carboniferous, Sicily, Rüst, Palæontogr. xxxviii, p. 184, pl. xxviii, fig. 1, n. sp.
- †*Tricolocapsa abdominalis*, pl. xxviii, fig. 4, *T. thoracica*, fig. 3, p. 186, Carboniferous, Sicily, *T. anceps*, fig. 6, *T. grandæra*, fig. 5, p. 185, Carboniferous, Hartz Mountains, Rüst, Palæontogr. xxxviii, n. spp.
- †*Tripilidium dissociatum*, Carboniferous, Hartz Mountains, Rüst, Palæontogr. xxxviii, p. 178, pl. xxvi, fig. 6, n. sp.
- †*Trissocircus primævus*, Carboniferous, Sicily, pl. xi, fig. 7, *T. quadratus*, Devonian, South Ural, pl. x, fig. 9, p. 177, Rüst, Palæontogr. xxxviii, n. spp.
- †*Trochodiscus convexus*, p. 164, pl. xx, fig. 7, *T. longispinus*, pl. xxi, fig. 4, p. 165, *T. nicholsoni*, fig. 3, *T. proavus*, fig. 1, *T. serrula*, fig. 2, Carboniferous, Hartz Mountains, *T. recurispinus*, Devonian, Schæben-



- holz, fig. 5, *T. diversispinus*, Silurian, Cabrières, fig. 6, p. 164, Palæontogr. xxxviii, n. spp.
- Tuscarora nationalis*, Irminger Sea, Atlantic, 600 metres, BORGERT, Plankt. Exp. p. 182, pl. vi, fig. 7, n. sp.
- † *Xiphosphæra macrostyla*, Devonian, Hartz Mountains, RÜST, Palæ xxxviii, p. 141, pl. ix, fig. 10, n. sp.
- † *Xiphostylus ardea*, Carboniferous, Hartz Mountains, pl. x, fig. 11, *asper*, Silurian, Cabrières, pl. ix, fig. 11, p. 142, RÜST, Palæ xxxviii, n. spp.
- † *Zonodiscus dentatus*, Silurian, Cabrières, pl. xix, fig. 11, *Z. mac*, Carboniferous, Hartz Mountains, fig. 12, RÜST, p. 162, Palæ xxxviii, n. spp.
- † *Zygocircus priscus*, Carboniferous, Hartz Mountains, pl. x, fig. 13, *simplicissimus*, Carboniferous, Sicily, fig. 7, RÜST, p. 176, Palæ xxxviii, n. spp.
- † *Zygosterhanus quadrupes*, Carboniferous, Sicily, RÜST, Palæ xxxviii, p. 177, pl. xi, fig. 8, n. spp.

### *B.—CORTICATA.*

#### Class 1.—SPOROZOA.

- For a revised classification of the group, see MINGAZZINI (104).
- Blanchardia*, n. g. with *B. cypricola*, n. sp., parasitic in *Cypris ca*, SOLGER, p. 99, MT. Vorpomm. xxii.
- Ceratomyxa agilis*, pp. 962 & 963, in *Trygon vulgaris*, Concarneau, *diculata*, pp. 963 & 964, in *Lophius piscatorius*, Roscoff, a p. 1091, in *Motella triserrata*, THÉLOHAN, C.R. cxv, n. spp.
- Coccidium cruciatum*, p. 136, in the liver of *Caranx trachurus*, Concarneau, p. 137, in liver, spleen, and kidney of Tench, THÉ J. de l'Anat. Phys. 1892; *C. tenellum*, in intestinal epithel Fowl, *truncatum*, p. 249, in kidney of Fowl, BAILLIET & p. 248, Bull. Soc. Z. Fr. xvi : n. spp.
- Cretya neapolitana*, in the pyloric appendages of *Sphyræna vi*, MINGAZZINI, p. 400, fig. 2, Atti Acc. Pontif. Lincei (5), 1, n. s.
- Gonobia colubri*, in vas deferens and testis of *Zamenis virid*, MINGAZZINI, p. 396, fig. 1, Atti Acc. Pontif. Lincei (5), 1, n. s.
- Gregarina satiræ*, p. 234, pl. viii, figg. 1-15, in intestine of *Statira u*, Bl., *bergi*, p. 286, pl. viii, figg. 16-19, in intestine of *Co*, *ruficollis*, *panchlore*, p. 299, pl. viii, fig. 20, in intestine of *Pa*, *exoleata*, *blabere*, p. 300, pl. viii, figg. 21-33, in intestine of *I*, *claraziana*, Córdoba, Argentina, FRENZEL, Jen. Z. Nat. xxvi, *irregularis*, MINCHIN, p. 291, pl. xxvii, Q. J. Micr. Sci. xx, bloodvessels of *Holothuria nigra*, at Plymouth : n. spp.
- Myxidium incurvatum*; THÉLOHAN, C.R. cxv, p. 1093, in *l*, *tricirrata*.

- Pyxinia crystalligera*, in intestine of *Dermestes vulpinus*, Fabr., and *peruvianus*, Cateln., Córdoba, Argentina, FRENZEL, p. 314, pl. viii, figg. 34-50, Jen. Z. Nat. xxvii, n. spp.
- Sarcocystis hominis*, ROSENBERG, in human heart muscle, *S. platyductili*, BERTRAM, Zool. Jahrb. v, p. 584, pl. xxxviii, figg. 2-4, in muscle fibres of *Platyductylus facetanus*, Ald., *s. P. mauritanicus*, L., from Menorca, n. spp.
- Sphæromyxa*, n. g. with *S. balbianii*, n. sp., THÉLOHAN, C.R. cxv, p. 1093, in *Motella tricirrata*.

## Class 2.—FLAGELLATA.

KLEBS, Z. wiss. Zool. lv, p. 278, gives the following definition of the group: *Flagellata* are lower organisms which possess a usually sharply defined uninuclear protoplasmic body, the periplast of which is either a simple cortical layer, or a differentiated plasmic membrane. They are in motion for the greatest part of their life, or at least they always remain capable of such. They all have a specially formed anterior end bearing one or more flagella, and one or more pulsating vacuoles. Reproduction takes place by simple longitudinal fission mostly during the flagellate state, sometimes when at rest. All are able to form resting cysts for a shorter or longer period.

He proposes the following classification:—

1. PROTOMASTIGINA. Families: *Rhizomastigina*, *Monadina*, *Bikécida*, *Cruspeomonadina*, *Spongomonadina*, *Amphimonadina*, *Bodonina*.
2. POLYMASTIGINA. Families: *Trimastigina*, *Tetramitina*, *Distomata*.
3. EUGLENOIDINA. Families: *Euglenida*, *Astasiida*, *Peranemida*.
4. CHLOROMONADINA.
5. CHROMOMONADINA. Families: *Chrysomonadina*, *Cryptomonadina*.

*Anisonema variabile*, p. 385, pl. xvii, figg. 5 *a*, *b*, *striatum*, p. 386, figg. 14 *a*, *b*, *ovale*, p. 386, figg. 6 *b*, *c*, Basle, KLEBS, Z. wiss. Zool. lv, n. spp.

*Astasiida*, n. fam., KLEBS, p. 356, Z. wiss. Zool. lv.

*Astasiodes lagenula*, Malay Archipelago, Bali, SCHEWIAKOFF, p. 551, Verh. Ver. Heidelb. (n.s.) iv, n. sp.

*Bodo minimus*, p. 310, pl. xiii, figg. 7 *a-d*, *edax*, p. 312, figg. 8 *a-c*, *celer*, p. 313, figg. 6 *a-c*, *mutabilis*, p. 317, pl. xiv, figg. 2 *a-c*, *repens*, p. 317, figg. 1 *a-c*, Basle, KLEBS, Z. wiss. Zool. lv, n. spp.

*Chlamydomonas de-baryana*, near Moscow, p. 106, pl. i, figg. 9-12, *kuteinikowi*, p. 117, pl. ii, figg. 9-13, *reticulata*, p. 124, pl. iii, figg. 1-9, Lichobory and Butyrki, Russia, GOROSCHANKIN, Bull. Mosc. 1891, n. spp.

*Chloromonadina*, n. fam., KLEBS, p. 391, Z. wiss. Zool. lv.

*Chromomonadina*, n. fam., KLEBS, p. 394, Z. wiss. Zool. lv.

*Chromulina batalini*, Sydney, p. 550, SCHEWIAKOFF, Verh. Ver. Heidelb.



- Oikomonas excavata*, Sydney, SCHEWIAKOFF, p. 549, Verh. Ver. Heidelb. (n.s.) iv, n. sp.
- Peranemida*, n. fam., KLEBS, p. 362, Z. wiss. Zool. lv.
- Petulomonas serlobata*, Basle, KLEBS, p. 383, pl. xiv, figg. 19, a, b, Z. wiss. Zool. lv, n. sp.
- Phyllomitus amylophagus*, Basle, KLEBS, p. 321, pl. xiv, figg. 6 a-e, Z. wiss. Zool. lv, n. sp.
- Phyllomonas*, n. g., with *P. contorta*, n. sp., Basle, KLEBS, p. 305, pl. xiii, figg. 11 a-d, Z. wiss. Zool. lv.
- Pyrsonympha flagellata*, parasitic in *Termes lucifugus*, GRASSI, p. 36, Atti Acc. Pontif. Lincei (5) i, n. sp.
- Rhynchomonas*, n. g., with *R. nasuta*, Stokes, n. sp., Basle, p. 320, pl. xiv, figg. 7 a-d; KLEBS, Z. wiss. Zool. lv.
- Spiroæma*, n. g., with *S. multiciliatum*, n. sp., Basle; KLEBS, p. 350, pl. xvi, figg. 9 a-c, Z. wiss. Zool. lv.
- Stephanoon*, n. g., with *S. askenasi*, Melbourne, SCHEWIAKOFF, Verh. Ver. Heidelb. (n.s.) iv.
- Streptomonas*, n. g., p. 307, with *S. cordatu*, Perty., n. sp., Basle, p. 307, pl. xiii, figg. 10 a, b; KLEBS, Z. wiss. Zool. lv.
- Thylakomonas*, n. g., with *T. compressa*, n. sp., Sydney, SCHEWIAKOFF, p. 550, Verh. Ver. Heidelb. (n.s.) iv.
- Trepomonas rotans*, p. 349, pl. xvi, figg. 4 a-c, *steinii*, p. 349, figg. 5 a-d, Basle, KLEBS, Z. wiss. Zool. lv, n. spp.
- Trigonomonas*, n. g., with *T. compressa*, n. sp., Basle, KLEBS, p. 330, pl. xv, figg. 5 a-g, Z. wiss. Zool. lv.
- Urophagus*, n. g., with *U. rostratus*, Stein, n. sp., Basle, p. 341, KLEBS, Z. wiss. Zool. lv.
- Xanthodiscus*, n. g., with *X. vacillans*, n. sp., Gippsland, Victoria, SCHEWIAKOFF, p. 551, Verh. Ver. Heidelb. (n.s.) iv.

Class 3.—DINOFLAGELLATA.

- Glenodinium uliginosum*, Brennet, in Baden, p. 64, pl. iii, fig. 16, *neglectum*, Baden, p. 65, pl. iii, fig. 17, *cornifex*, p. 66, pl. iii, fig. 18, SCHILLING (134); *G. edax*, Basle, pp. 206 & 207, pl. x, figg. 23 & 24, SCHILLING, Ber. Deutsch. Bot. Ges. ix : n. spp.
- Gymnodinium palustre*, p. 58, pl. iii, fig. 11, *carinatum*, p. 59, fig. 12, *paradozum*, p. 59, fig. 13, *hyalinum*, p. 60, fig. 14, *pusillum*, p. 60, fig. 15, SCHILLING (134), n. spp.

Class 5.—CILIATA.

- Astylozoon pyriforme*, New Zealand, SCHEWIAKOFF, p. 561, Verh. Ver. Heidelb. (n.s.) iv, n. sp.
- Balantiophorus elongatus*, Gray's Peak (8700 feet) in Colorado, p. 558, *bursaria*, Bali I., p. 558, SCHEWIAKOFF, Verh. Ver. Heidelb. (n.s.) iv, n. spp.
- Blepharostoma*, n. g., with *B. glaucoma*, n. sp., Sydney; SCHEWIAKOFF, p. 554, Verh. Ver. Heidelb. (n.s.) iv.

- Codonella radix*, Lagoons of Venice, IMHOF, p. 4, *Neptunia*, i, n. sp.  
*Cranotheridium*, n. g., with *C. teniatum*, n. sp., New Zealand, SCH  
 KOFF, p. 554, Verh. Ver. Heidelb. (n.s.), iv.  
*Dichilum*, n. g., with *D. cuneiforme*, n. sp., Sydney, SCHEWIAKOFF,  
 Verh. Ver. Heidelb. (n.s.), iv.  
*Glaucoma setosa*, p. 554, *reniformis*, p. 555, Sydney, *colpidium*, New  
 land, p. 555, SCHEWIAKOFF, Verh. Ver. Heidelb. (n.s.), iv, n. s.  
*Holophrya simplex*, Oahu and Hawaii, SCHEWIAKOFF, p. 553, Verh.  
 Heidelb. (n.s.) iv, n. sp.  
*Ichthyophthirius cryptostomus*, Plön, Holstein, ZACHARIAS, (164)  
 pl. i, n. sp.  
*Meseres*, n. g., *cordiformis*, *M. stentor*, n. spp., New Zealand, SCH  
 KOFF, Verh. Ver. Heidelb. (n.s.) iv.  
*Monochilum*, n. g., with *M. frontatum*, n. sp., Oahu, SCHEWIAKOFF,  
 Verh. Ver. Heidelb. (n.s.) iv.  
*Plagiocampa*, n. g., with *P. mutabile*, n. sp., Sydney, SCHEWIA  
 KOFF, p. 557, Verh. Ver. Heidelb. (n.s.) iv.  
*Rhabdostyla arenaria*, from *Synapta adhaerens*, Roscoff, CUÉNOT,  
 Biol. iii, p. 290, pl. v, fig. 2, n. sp.<sup>1</sup>  
*Stegochilum*, n. g., with *S. fusiforme*, n. sp., Taupo Lake, N. Z., SCH  
 KOFF, p. 556, Verh. Ver. Heidelb. (n.s.) iv.  
*Strobilidium*, n. g., with *S. adhaerens*, n. sp., New Zealand, SCHEWIA  
 KOFF, p. 559, Verh. Ver. Heidelb. (n.s.) iv.  
*Tetrastyla*, n. g., with *T. oblonga*, n. sp., New Zealand, SCHEWIA  
 KOFF, p. 561, Verh. Ver. Heidelb. (n.s.) iv.  
*Thylakidium*, n. g., with *T. truncatum*, n. sp., Sydney, SCHEWIA  
 KOFF, p. 559, Verh. Ver. Heidelb. (n.s.) iv.  
*Trichodina synaptæ*, p. 289, pl. v, fig. 1, *antedonis*, p. 290, fig. 2, both  
 from *Synapta adhaerens*, Roscoff, CUÉNOT, Rev. Biol. iii, n. spp.  
*Uronema orale*, Sydney, SCHEWIAKOFF, p. 556, Verh. Ver. Heidelb.  
 iv, n. sp.  
*Urotricha furcata*, Oahu, p. 553, *globosa*, New Zealand, p. 553, SCH  
 KOFF, Verh. Ver. Heidelb. (n.s.) iv, n. spp.  
*Vorticella amphiuæ*, fig. 4, from *Amphiura squamata*, Naples, CU  
 ÉNOT, p. 292, pl. v, Rev. Biol. iii, n. sp.

## INCERTÆ SEDIS.

- Limnophrya elegans*, ZACHARIAS, Zool. Anz. xv, p. 459, n. sp. [  
 n. g.] not described.  
*Neusina*, n. g., with *N. agassizi*, n. sp., from the American Tr  
 Pacific; GÖES, Bull. Mus. C. Z. xxiii, p. 195. He supposes it to  
 be an arenaceous Foraminifer: but as the description and illustration  
 of this form are almost identical with those given by HÆCKEL for *S  
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\* The total number of names in this Index is 1520, distributed as follows:—*Mammalia*, 31; *Aves*, 37; *Reptilia and Batrachia*, 44; *Pisces*, 34; *Tunicata*, 3; *Mollusca*, 145; *Brachiopoda*, 27; *Bryozoa*, 2; *Crustacea*, 37; *Arachnida*, 120; *Myriopoda*, 2; *Insecta*, 916; *Echinodermata*, 7; *Vermes*, 42; *Calenterata*, 3; *Spongia*, 19; *Protozoa*, 51. The corresponding total last year was 1399, and ten years ago, in 1882, 1015.

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